TEST REPORT
IEC 60950
Safety of information technology equipment

Report Reference No. ..... :	E2172805.01
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Testing laboratory ..... :	TUV Rheinland of North America, Inc.
Address ..... :	12 Commerce Road, Newtown, CT 06470
Testing location ..... :	TUV Rheinland of North America, Inc.
Applicant Name ..... :	Myricom, Inc.
Address ..... :	325 N. Santa Anita Ave., Arcadia CA 91006
Test specification Standard ..... :	IEC 60950:1991+A1:1992+A2:1993+A3:1995+A4:1996 EN 60950:1992+A1+A2+A3+A4+A11
Test procedure ..... :	CB scheme
Procedure deviation ..... :	Group, AT, AU, BE, CA, CH, CN, CZ, DE, DK, ES, FI, FR, GB, GR, HU, IE, IL, IN, IT, JP, KR, NO, NL, PL, RU, SE, SI, SK, US, ZA
Non-standard test method ..... :	N.A.
Test item ..... :	Modular Switches and Switch Networks
Trademark ..... :	Myrinet
Model and/or type reference ..... :	**M3-E16, M3-E32, M3-E64, M3-E128**
Manufacturer ..... :	Myricom, Inc., 325 N. Santa Anita Ave., Arcadia CA 91006
Rating(s) ..... :	100 – 127 Vac / 200 - 240 Vac, 50 / 60 Hz, 2.0 / 1.0 A (M3-E16), 3.0 / 1.5 A (M3-E32), 6.0 / 3.0 A (M3-E64), 12.5 / 6.25 A (M3-E128),

Test item particulars

Equipment mobility ..... : fixed equipment / rack mount

Operating condition.....:	continuous
Tested for IT power systems.....:	No
IT testing, phase-phase voltage (V).....:	-
Class of equipment.....:	Class I
Mass of equipment (kg).....:	7.6kg (M3-E16), 9.6kg (M3-E32), 12.8kg (M3-E64), 21.2kg (M3-128)
Protection against ingress of water.....:	IPX0

Test case verdicts

Test case does not apply to the test object.....:	N(.A.)
Test item does meet the requirement .....:	P(ass)
Test item does not meet the requirement.....:	F(ail)

Short description of the unit:

The products as covered by this test report are 'Modular Switches and Switch Networks' with the model designations **'M3-E16, M3-E32, M3-E64, M3-E128'.** All models are out of one model series and they are mostly identical. All enclosures contain a metal chassis, one approved power supply (different for each model), approved DC fans, a backplane, AC-Inlet/Filter and interface cards, which are all interchangeable. The backplanes of the –E32, -E64 and –E128 include 16-port crossbar switches that form the 'Spine of a Clos network'. The top slot is reserved for a monitoring line card. The other slots accept port line cards with up to 8 ports on the front panel, and 8 SAN ports that connect to the backplane.

Model No. **M3-E16** is a '2U high, 3-slot enclosure for switches up to 16 ports',
Model No. **M3-E32** is a '3U high, 5-slot enclosure for switch networks up to 32 ports',
Model No. **M3-E64** is a '5U high, 9-slot enclosure for switch networks up to 64 hosts',
Model No. **M3-E128** is a '9U high, 17-slot enclosure for switch networks up to 128 ports',

There are no connections to a Telecommunication Network (TNV). The equipment is rated for a maximum ambient temperature of 40ºC.

CDRH-Report for Optical Transceiver has to be provided by customer for US Approval.

attachments are numbered : X - Y/Z

X : attachment no.
Y : page no.
Z : total no. of pages in the attachment

Attachments:

Attachment A: Copy of Rating Labels
Attachment B: Photographs of test sample
Attachment C: Copy of CB-Cert. for Power Supplies
Attachment D: Photographs of AC/DC part of power supply for M/N: M3-E128 *('Power One', M/N: HPF3BCB1YE*
Attachment E: Transformer Spec. for (T1)

Abbreviations: pri. : primary
sec. : secondary gnd. : ground
PE : protective earth
SWPS : Switching power supply
HV : high voltage
*) : covered by certified power supplies

Clause	Requirement – Test	Result - Remark	Verdict
1	GENERAL		P
1.5	Components		P
1.5.1	Comply with IEC 60950 or relevant component standard	(see appended table)	P
1.5.2	Evaluation and testing of components	All safety critical components are certified, all components are used within their rating, PCBs and wiring material are UL listed, non-certified components were tested according this standard	P
	Dimensions (mm) of mains plug for direct plug-in . :		N
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N)		N
1.5.3	Transformers	According to Annex C *(T1 of 'HPF3 Bias Board' of power supply for M/N: 'M3-128';* other transformers are part of certified power supplies	P
1.5.4	High voltage components (component; manufacturer; flammability) ..... :	Not Applicable	N
1.5.5	Interconnecting cables	Signal cables only used which carry no hazardous potentials or energy levels	P
1.5.6	Mains capacitors	All X capacitors are according to IEC 384-14 or part of certified power supplies	P
1.6	Power interface		P
1.6.1	Steady state input current	**M3-E16**: 1.77A (90Vac), 0.74A (208Vac) **M3-E32**: 2.70A (90Vac), 1.15A (208Vac) **M3-E64**: 4.35A (90Vac), 1.81A (208Vac) **M3-E128**: 12.32A (90Vac), 5.08A (208Vac)	P
	Current deviation during normal operating cycle	< 10%	P

Clause	Requirement – Test	Result - Remark	Verdict
1.6.2	Voltage limit of hand-held equipment	no hand held device	N
1.6.3	Neutral conductor insulated from earth and body	Neutral is isolated by basic insulation (BI) from PE at AC-Inlet/Filter and within approved power supplies	P
1.6.4	Components in equipment intended for IT power system	All Y-caps are approved components according to IEC 384-14	P
1.6.5	Mains supply tolerance (V) ..... :	Tested at +6/-10%: 90 - 254V	P

1.7	Marking and instructions		P
1.7.1	Rated voltage (V) ..... :	AC 100-127 V / 200–240V	P
	Symbol of nature of supply for d.c. ..... :	AC input	N
	Rated frequency (Hz) ..... :	50 / 60 Hz	P
	Rated current (A) ..... :	2.0 / 1.0 A (M3-E16), 3.0 / 1.5 A (M3-E32), 6.0 / 3.0 A (M3-E64), 12.5 / 6.25 A (M3-E128)	P
	Manufacturer ..... :	Myricom, Inc.	P
	Trademark ..... :	Myrinet	P
	Type/model ..... :	M3-E16, M3-E32, M3-E64, M3-E128	P
	Symbol of Class II ..... :	class I product	N
	Certification marks ..... :	‘cTUVus’, other marks to be provided	P
1.7.2	Safety instructions	User Manual explains safe operation	P
1.7.3	Short duty cycles		N
1.7.4	Marking for voltage setting/frequency setting ..... :	No adjustments to be done, power supplies are autoranging	P
1.7.5	Marking at power outlets ..... :	No power outlets	N
1.7.6	Marking at fuseholders ..... :	None accessible to operator	N
1.7.7.1	Protective earthing terminals	Not required, PE supplied through certified inlet, PE ground connection to enclosure	P

Clause	Requirement – Test	Result - Remark	Verdict
		via chassis	
1.7.7.2	Terminal for external primary power supply conductors	detachable power cord	N
1.7.8.1	Identification and location of switches and controls ..... :	No switches and controls, only 'status'-LEDs at front of cards which are not safety relevant	N
1.7.8.2	Colours of controls and indicators ..... :	Green LEDs used for status indication	P
1.7.8.3	Symbols according to IEC 417 ..... :	Ground symbol according to IEC 417, No. 5019	P
1.7.8.4	Figures used for marking ..... :	No figures used	N
1.7.8.5	Location of markings and indications for switches and controls ..... :	No switches and controls used, no markings provided	N
1.7.9	Isolation of multiple power sources ..... :	single power source only	N
1.7.10	Instructions for installation to IT power system	EUTs not verified for IT power connection	N
1.7.11	Instructions when protection relies on building installation	pluggable type A connection via appliance inlet, no special requirements	N
1.7.12	Marking when leakage current exceeds 3,5 mA	No excessive leakage current measured	N
1.7.13	Indication at thermostats and regulating devices	No such devices used	N
1.7.14	Language of safety markings/instructions	Safety markings / Instructions provided in users manual	P
	Language ..... :	English	-
1.7.15	Durability and legibility	Meets rubbing test, UL approved label system; ground symbols are engraved in to the metal chassis	P
1.7.16	Removable parts	see 1.7.14	N
1.7.17	Warning text for replaceable lithium batteries	No lithium batteries used	N
	Language ..... :		-
1.7.18	Operator access with a tool ..... :	No operator access to any internal areas which contain hazardous voltages; once cards have been removed, operator has access to SELV	N

Clause	Requirement – Test	Result - Remark	Verdict
		areas only, no tools required	
1.7.19	Equipment for restricted access locations ..... :	EUT is not considered for exclusive usage in restricted access locations	N
2	PROTECTION FROM HAZARDS		P
2.1	Protection against electric shock and energy hazards		P
2.1.1	Access to energized parts	No access	P
2.1.2	Protection in operator access areas	Adequate protection by enclosure. There is no access to hazardous parts.	P
	Test by inspection ..... :	Protection is established by insulation materials	P
	Test with test finger ..... :	No access to above mentioned parts	P
	Test with test pin ..... :	No access to above mentioned parts	P
2.1.3.1	Insulation of internal wiring in an ELV circuit accessible to operator	No ELV accessible	N
	Working voltage (V); distance (mm) through insulation ..... :		N
2.1.3.2	Operator accessible insulation of internal wiring at hazardous voltage	Not accessible	N
2.1.4.1	Protection in service access areas	No unexpected hazards inside the unit, no unintentional contact to hazardous areas likely, SWPSs are covered	P
2.1.4.2	Protection in restricted access locations	Not applied	N
2.1.5	Energy hazard in operator access area	No energized parts remain once power is disconnected	P
2.1.6	Clearances behind conductive enclosures	No reduction below limits or deformation possible which is safety relevant	P
2.1.7	Shafts of manual controls	None provided	N
2.1.8	Isolation of manual controls	see 2.1.7	N
2.1.9	Conductive casings of capacitors	Conductive casings of	P

Clause	Requirement – Test	Result - Remark	Verdict
		capacitors considered of the same potential as the pins within approved power supplies	
2.1.10	Risk of electric shock from stored charge on capacitors connected to mains circuit	No hazards, measured at 254Vac	P
	Time-constant (s); measured voltage (V) ..... :	**M3-E16:** 6.5V after 1 sec. ('Power One'), 6.7V after 1 sec. ('Astec'-power supply) **M3-E32**: 19.0V after 1 sec. **M3-E64:** 0.4V after 1 sec. **M3-E128:** 0.3V after 1 sec.	-
2.2	Insulation		P
2.2.1	Methods of insulation	Insulation established through creepage and clearance distances and through certified power supplies	P
2.2.2	Properties of insulating materials	Insulation materials are adequately selected No hygroscopic materials	P
2.2.3	Humidity treatment	Humidity treatment performed on 'Power One' power supply Other employed materials are not susceptible to humidity	P
	Humidity (%) ..... :	95%RH	-
	Temperature (ºC) ..... :	28ºC	-
2.2.4	Requirements for insulation	Insulation provided met all requirements and passed electric strength tests (see also 2.9, 5.1 and 5.3)	P
2.2.5	Insulation parameters	Considered	P
2.2.6	Categories of insulation	Basic insulation between primary and ground/ reinforced or double insulation between primary and secondary/ from hazardous voltages to the operator and to unearthed conductive parts / operational insulation between the lines ahead of the fuse	P

Clause	Requirement – Test	Result - Remark	Verdict
2.2.7.1	General rules for working voltages	(results see 2.9)	P
2.2.7.2	Clearances in primary circuits	Within approved power supplies and between primary of power supplies and secondary wiring	P
2.2.7.3	Clearances in secondary circuits	SELV only, no special requirements	P
2.2.7.4	Creepage distances	Refer to appended table	P
2.2.7.5	Electric strength tests	See table 5.3	P
2.2.8.1	Bridging capacitors ..... :	Approved power supplies	N
2.2.8.2	Bridging resistors	Approved power supplies	N
2.2.8.3	Accessible parts	No such components	N
2.3	Safety extra-low voltage (SELV) circuits		P
2.3.1	Voltage (V) of SELV circuits under normal operating conditions and after a single fault ..... :	12V maximum from the certified power supplies	-
2.3.2	Voltage (V) between any two conductors of SELV circuit(s) and for Class I equipment between any conductor of SELV circuit and equipment protective earthing terminal under normal operating conditions ..... :	12V maximum from the certified power supply	P
2.3.3	Voltage (V) of SELV in the event of a single failure of basic or supplementary insulation or of a component ..... :	<42.4VAC or 60VDC, compliance based on certification of SWPS	-
	Method used for separation ..... :	Method 1	P
2.3.4	Additional constructional requirements		P
2.3.5	Connection of SELV circuits to other circuits	Only SELV type interfaces	P
2.4	Limited current circuits		N
2.4.2	Frequency (Hz) ..... :		-
	Measured current (mA) ..... :		N
2.4.3	Measured voltage (V) ..... :		-
	Measured capacitance (ºF) ..... :		N
2.4.4	Measured voltage (V) ..... :		-
	Measured charge (ºC) ..... :		N

Clause	Requirement – Test	Result - Remark	Verdict
2.4.5	Measured voltage (V) ..... :		-
	Measured energy (mJ) ..... :		N
2.4.6	Limited current circuit supplied from or connected to other circuits ..... :		N
2.5	Provisions for earthing		P
2.5.1	Class I equipment	PE connection through earthing pin of appliance inlet via GRN/YLW-wire to chassis. The ground wire is connected to the chassis by a dedicated stud using ring-lug first, starwasher and nut. On top of that the ground wire of the power supply is connected using another starwasher and nut.	P
	Warning label for service personnel		N
2.5.2	Protective earthing in Class II equipment	Class I equipment	N
2.5.3	Switches/fuses in earthing conductors	None	P
2.5.4	Assured earthing connection for Class I equipment in systems comprising Class I and Class II equipment	Class I equipment only	N
2.5.5	Green/yellow insulation	Only GRN/YLW-wire is used	P
2.5.6	Continuity of earth connections	None	N
2.5.7	Making and breaking of protective earthing connections	Approved AC-inlet is used	P
2.5.8	Disconnection protective earthing connections	PE does not have to be disconnected for servicing	P
2.5.9	Protective earthing terminals for fixed supply conductors or for non-detachable power supply cords		N
2.5.10	Corrosion resistance	Table 1 of Annex J consid.	P
2.5.11	Resistance (Ohm) of protective earthing conductors < 0,1 Ohm	Resistance measured after 120 sec. from PE at appl. inlet to chassis: **M3-E16:** 21.78mOhm **M3-E32:** 22.74mOhm	P

Clause	Requirement – Test	Result - Remark	Verdict
		M3-E64: 17.01mOhm **M3-E128:** 17.57mOhm	
	Test current (A) ..... :	30	-
2.6	Disconnection from primary power		P
2.6.1	General requirements	Approved Appliance Inlet	P
2.6.2	Type of disconnect device ..... :	Provided appliance inlet	P
2.6.3	Disconnect device in permanently connected equipment	not permanently connected	N
2.6.4	Parts of disconnect device which remain energized	No parts remain energized after disconnect	N
2.6.5	Switches in flexible cords	none	N
2.6.6	Disconnection of both poles simultaneously in single-phase equipment	with appliance inlet, certified inlet	P
2.6.7	Disconnection of all phase conductors of supply in three-phase equipment	single phase equipment	N
2.6.8	Marking of switch acting as disconnect device	Switch not used	N
2.6.9	Installation instructions if plug on power supply cord acts as disconnect device	Not required	N
	Language ..... :		-
2.6.11	Interconnected equipment	No groups present	N
2.6.12	Multiple power sources	single power source	N
2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	Earth fault protection is assumed to be provided by building installation.	P
2.7.2	Protection against faults not covered in 5.4	Fault protection provided by approved power supplies	P
2.7.3	Short-circuit backup protection	No additional means of protection needed for compliance to requirements of this standard	N
2.7.4	Number and location of protective devices ..... :	Power supplies are provided with short circuit current protection by one fuse in one line, earth fault protection by	P

Clause	Requirement – Test	Result - Remark	Verdict
		building installation	
2.7.5	Protection by several devices	Fuse is single component	P
2.7.6	Warning to service personnel	No unexpected hazard	N
2.8	Safety interlocks		N
2.8.2	Design	None required – none provided	N
2.8.3	Protection against inadvertent reactivation		N
2.8.4	Reliability		
2.8.5	Overriding an interlock		N
2.8.6.1	Contact gap (mm) ..... :		N
2.8.6.2	Switch performing 50 cycles		N
2.8.6.3	Electric strength test: test voltage (V) ..... :		N
2.8.7	Protection against overstress		P
2.9	Clearances, creepage distances and distances through insulation		P
	Nominal voltage (V) ..... :	Actual working voltage applied, but not less than the supply voltage of 240Vac	-
	General		P
2.9.2	Clearances		P
2.9.2.1	Clearances in primary circuits	(see table 2.9.2 and 2.9.3)	P
2.9.2.2	Clearances in secondary circuits	(see table 2.9.2 and 2.9.3)	P
2.9.3	Creepage distances	(see table 2.9.2 and 2.9.3)	P
	CTI tests ..... :	None performed, class IIIb was assumed for all tests	-
2.9.4.1	Minimum distances through insulation	RI provided in Certified power supplies which is the only necessity for RI; supplementary insulation in form of sleeving on secondary wiring touching primary (-wiring at AC-inlets): min. distance 0.4mm	P
2.9.4.2	Thin sheet material	Isolation transformer is part of	N

Clause	Requirement – Test	Result - Remark	Verdict
		approved SWPS's	
	Number of layers (pcs) ..... :		N
	Electrical strength test: test voltage (V) ..... :		N
2.9.4.3	Printed boards	Not used for supplementary or reinforced insulation	N
	Distance through insulation		N
	Electric strength test at voltage for thin sheet insulating material		N
	Number of layers (pcs) ..... :		N
2.9.4.4	Wound components without interleaved insulation	None provided	N
	Number of layers (pcs) ..... :		N
	Two wires in contact inside component; angle between 45º and 90º		N
	Routine testing for finished component		N
2.9.5	Distances on coated printed boards	Not used	N
	Routine testing for electric strength		N
2.9.6	Enclosed and sealed parts	No hermetically sealed components; approved power supplies used	N
	Temperature T1 (ºC) ..... :		N
	Humidity % ..... :		N
2.9.7	Spacings filled by insulating compound	No insulating compound is used to fill BI and SI	N
	Temperature T1 (ºC) ..... :		N
	Humidity % ..... :		N
2.9.8	Component external terminations	(see appended table 2.9.2 and 2.9.3)	P
2.9.9	Insulation with varying dimensions	considered in approved power supplies	P
2.10	Interconnection of equipment		P
2.10.1	General requirements	SELV signal connections only	P
2.10.2	Type of interconnection circuits ..... :	See above	P

Clause	Requirement – Test	Result - Remark	Verdict
2.10.3	ELV circuits as interconnection circuits	No ELV connections	N
2.11	Limited power source		N
	Use of limited power source ..... :	not used	N
3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Cross-sectional area of internal wiring/interconnecting cables	Sufficiently rated wiring for AC distribution	P
	Protection of internal wiring and interconnecting cables	Sufficiently protected by primary fuse and over current protection circuits	P
3.1.2	Wireways	Wires are clamped and routed to avoid exposure to mechanical or thermal stress	P
3.1.3	Fixing of internal wiring	Reliable by double crimped providing double restraint. Other connectors are insulation crimp type	P
3.1.4	Fixing of uninsulated conductors	10 N applied to all uninsulated conductors like the pins of components	P
3.1.5	Insulation of internal wiring	inspected	P
3.1.6	Wires coloured green/yellow only for protective earth connection		P
3.1.7	Fixing of beads and similar ceramic insulators	No beads or similar insulators used; approved power supplies provided	N
3.1.8	Required electrical contact pressure	No contact pressure through insulation material	N
3.1.9	Reliable electrical connections	Reliable connection, contact pressure is not transmitted through insulating materials	P
3.1.10	End of stranded conductor	No contact pressure on stranded wire	N
3.1.11	Use of spaced thread screws/thread-cutting	None used	N

Clause	Requirement – Test	Result - Remark	Verdict
	screws		
3.2	Connection to primary power		P
3.2.1	Type of connection ..... :	Detachable power cord, pluggable equipment type A	P
	Design of product with more than one supply connection ..... :		N
3.2.2	Provision for permanent connection ..... :	no means for permanent connections provided	N
	Size (mm) of cables and conduits ..... :		N
3.2.3	Appliance inlet	Certified AC-inlet/Filters are used (IEC 320)	P
3.2.4	Type and cross-sectional area (mm²) of power supply cord ..... :	Power cords are distributed for various countries, refer to list of critical components for details	P
3.2.5	Cord anchorage		N
	Test: 25 times; 1 s; pull (N) ..... :	detachable power cord	-
	Longitudinal displacement < 2 mm ..... :		N
3.2.6	Protection of power supply cord	detachable power cord	N
3.2.7	Cord guard		N
	D (mm) ..... :	detachable power cord	-
	Test: mass (g) ..... :	detachable power cord	-
	Radius of curvature of the cord > 1,5 D		-
3.2.8	Supply wiring space	detachable power cord	N
3.3	Wiring terminals for external power supply conductors		N
3.3.1	Terminals	detachable power cord	N
3.3.2	Special non-detachable cord		N
	Type of connection ..... :		-
	Pull test at 5 N		N
3.3.3	Screws and nuts		N
3.3.4	Fixing of conductors		N
3.3.5	Connection of connectors		N

Clause	Requirement – Test	Result - Remark	Verdict
3.3.6	Size of terminals		N
	Nominal thread diameter (mm) ..... :		N
3.3.7	Protection against damage of conductors		N
3.3.8	Terminal location		N
3.3.9	Test with 8 mm stranded wire		N
4	PHYSICAL REQUIREMENTS		P
4.1	Stability and mechanical hazards		P
4.1.1	Stability tests		N
	Angle of 10º	no tilting or overbalancing	P
	Test: force (N) ..... :	not floor standing	N
4.1.2	Protection against personal injury	no moving parts	P
4.1.3	Warning and means provided for stopping the moving part ..... :		N
4.1.4	Edges and corners	No sharp edges or similar hazards	P
4.1.5	Enclosure of a high pressure lamp	no such component	N
4.2	Mechanical strength and stress relief		P
4.2.1	General		P
4.2.2	Internal enclosures 30 N ± 3 N; 5 s	Internal enclosures of approved power supplies	N
4.2.3	External enclosures 250 N ± 10 N; 5 s	No damage or increased accessibility to hazardous potentials	P
4.2.4	Steel ball tests		P
	Fall test	Metal enclosure with sufficient spacing	P
	Swing test	Metal enclosure with sufficient spacing	P
4.2.5	Drop test	not hand-held	N
4.2.6	Heat test for enclosures of moulded or formed thermoplastic materials: 7 h; T (ºC) ..... :	Metal enclosure	N

Clause	Requirement – Test	Result - Remark	Verdict
4.2.7	Compliance criteria	No hazards	P
4.2.8	Mechanical strength of cathode ray tubes	none provided	N
4.3	Construction details		P
4.3.1	Changing of setting for different power supply voltages	Autoranging power supplies used	N
4.3.2	Adjustment of accessible control devices	None provided	N
4.3.4	Prevention of dangerous concentration of dust, powder, liquid and gas	No dust generated inside, no connections to liquids or gases	N
4.3.5	Fixing of knobs, grips, handles, levers		N
	Test: force (N) .....:	none provided	N
4.3.6	Driving belts/couplings shall not ensure electrical insulation	none provided	N
4.3.7	Retaining of sleeves	No safety relevant sleeving	N
4.3.9	Protection of loosening parts	Screws, wires and the like are adequately fixed	P
4.3.11	Resistance to oil and grease	no such materials inside	N
4.3.12	Protection against harmful concentration of ionizing radiation, ultraviolet light, laser or flammable gases (for laser see IEC 60825-1)	Optical transceiver is approved component and of 'class I', refer to list of critical components for further details	P
4.3.13	Securing of screwed connections	Power supplies connected to chassis with screws	P
4.3.15	Openings in the top of enclosure	None	N
	Dimensions (mm) .....:		-
4.3.16	Openings in the sides of enclosure		P
	Dimensions (mm) .....:	Vent opening(s) at right and left side of each unit, vents are separated for power supply and interface cards, 4.7mm holes on vent areas: **M3-E16**: 2 x (65 x 65) mm and 2 x (185 x 65) mm **M3-E32**: 2 x (99 x 104) mm and 2 x (99 x 188) mm **M3-E64**: 2 x (190x187) mm	-

Clause	Requirement – Test	Result - Remark	Verdict
		and 2 x (65 x 98) mm **M3-E128**: 2 x (130x374) mm and 2 x (138 x 129) mm	
4.3.17	Interchangeable plugs and sockets	Special shape of connectors	P
4.3.18	Torque test for direct plug-in equipment		N
	Additional torque (Nm) .....:	no built-in plug used	N
4.3.19	Protection against excessive pressure	No pressure generated inside	N
4.3.20	Protection of heating elements in Class I equipment	No intentional heating elements inside	N
4.3.21	Protection of lithium batteries		N
	Construction of protection circuit .....:	No lithium batteries used	P
4.3.22	Ageing of barrier/screen secured with adhesive		N
	Day 1: temperature (ºC); time (weeks) .....:	Safety relevant barriers are not solely secured by adhesives	N
	Day 8/22/57: a) temperature (ºC) for 1 h b) temperature (ºC) for 4 h c) temperature (ºC) over 8 h .....:		N
	Day 9/23/58: a) relative humidity (%) for 72 h b) temperature (ºC) for 1 h c) temperature (ºC) for 4 h d) temperature (ºC) over 8 h .....:		N
4.4	Resistance to fire		P
4.4.1	Methods of achieving resistance to fire	No excessive temperatures; no easily burning materials employed; fire enclosure provided	P
4.4.2	Minimizing the risk of ignition	Risk reduced to minimum due to appropriate flame rating of employed materials and components	P
	Printed board: manufacturer; type; flammability ...:	All PCB's have flammability of 94V-0	P
4.4.3	Flammability of materials and components	V-2 or better	P
4.4.3.2	Material and component: manufacturer; type;	See parts list	P

Clause	Requirement – Test	Result - Remark	Verdict
	flammability ..... :		
4.4.3.3	Exemptions ..... :		N
4.4.3.4	Wiring harnesses: manufacturer; flammability ..... :	Wires VW-1 or PVC	P
4.4.3.5	Cord anchorage bushings: manufacturer; flammability ..... :	None provided	N
4.4.3.6	Air filter assemblies: manufacturer; flammability .. :	None provided	N
4.4.4	Enclosures and decorative parts: manufacturer; type; flammability ..... :	No decorative parts, metal enclosure only	P
4.4.5	Conditions for fire enclosures		P
4.4.5.1	Components requiring fire enclosure: manufacturer; flammability ..... :	Fire enclosure provided	P
4.4.5.2	Components not requiring fire enclosure ..... :		N
4.4.6	Fire enclosure construction	no bottom openings, no burning or molten material can fall outside the fire enclosure	P
4.4.7	Doors or covers in fire enclosures	None	N
4.4.8	Flammable liquids	No liquids inside	N
5	THERMAL AND ELECTRICAL REQUIREMENTS		P
5.1	Heating		P
	Heating tests	(see appended table)	P
5.2	Earth leakage current		P
5.2.1	General	(according Annex D)	P
5.2.2	Leakage current	No excessive leakage current measured	P
	Test voltage (V) ..... :	254V, 60Hz	-
	Measured current (mA) ..... :	**M3-E16**: 0.076mA (Power One), 0.099mA (Astec) **M3-E32:** 0.099 mA **M3-E64:** 0.280 mA **M3-E128:** 0.790 mA	-
	Max. allowed current (mA) ..... :	3.5 mA	-
5.2.3	Single-phase equipment	considered	P

Clause	Requirement – Test	Result - Remark	Verdict
5.2.4	Three-phase equipment		N
5.2.5	Equipment with earth leakage current exceeding 3,5 mA		N
	Cross-sectional area (mm²) of internal protective earthing conductor ..... :		-
	Warning label		N
5.3	Electric strength		P
5.3.1	General		P
5.3.2	Test procedure	(see appended table)	P
5.4	Abnormal operating and fault conditions		P
5.4.2	Motors	Fan(s) – (a) blocked and (b) disconnected (already approved fans used)	P
5.4.3	Transformers	(T1) of 'HPF3 Bias Board' of power supply for M/N: M3-E128 was tested according to Annex C, other transformers are part of certified power supplies	P
5.4.4	Compliance of operational insulation		P
	Method used ..... :	Method a)	P
5.4.5	Electromechanical components in secondary circuits	None present	N
5.4.6	Other components and circuits	Part of certified power supplies	P
5.4.7	Test in any expected condition and foreseeable misuse	Ventilation openings closed: no unacceptable overheating of parts	P
5.4.8	Unattended use of equipment having thermostats, temperature limiters etc.	Thermal Switch (S1) is approved component	P
5.4.9	Compliance	no hazards noted	P
5.4.10	Ball-pressure test of thermoplastic parts; impression shall not exceed 2 mm	approved appliance inlet used, AC connectors or terminal blocks on power supplies are part of approved power supplies	N

Clause	Requirement – Test	Result - Remark	Verdict
6	CONNECTION TO TELECOMMUNICATION NETWORKS		N
6.1	General		N
6.2	TNV circuits		N
6.2.1.1	Limits of the TNV circuits		N
6.2.1.1 a)	TNV-1 circuits	No TNV circuits	N
6.2.1.1 b)	TNV-2 and TNV-3 circuits	No TNV circuits	N
6.2.1.2	Separation from other circuits and from accessible parts	No TNV circuits	N
	Voltage (V) in SELV circuits, TNV-1 circuits and accessible conductive parts in event of single insulation fault or component failure .....:		N
6.2.1.3	Operating voltages generated externally	No TNV circuits	N
	Voltage (V) in SELV circuit, TNV-1 circuit or accessible conductive part .....:		N
6.2.1.4	Separation from hazardous voltages .....:	No TNV circuits	N
	Insulation between TNV circuit and circuit at hazardous voltage		N
	Method used .....:		N
6.2.1.5	Connection of TNV circuits to other circuits		N
	Insulation (mm) between TNV circuit supplied conductively from secondary circuit and hazardous voltage circuit .....:		N
6.2.2.1	Protection against contact with bare conductive parts of TNV-2 and TNV-3 circuits	No TNV circuits	N
	Test with test finger		N
	Test with test probe		N
6.2.2.2	Battery compartments		N
	Marking next to door/on door		N
6.3	Protection of telecommunication network service personnel, and users of other equipment connected to the telecommunication network, from hazards in the equipment		N
6.3.1	Protection from hazardous voltages	No TNV circuits	N

Clause	Requirement – Test	Result - Remark	Verdict
6.3.2	Use of protective earthing		N
	Language of installation instructions .....:		N
6.3.3.1	Insulation between TNV circuit and parts or circuitry that may be earthed	No TNV circuits	N
6.3.3.2	Exclusions .....:		N
6.3.4.1	Limitation of leakage current (mA) to telecommunication network .....:	No TNV circuits	N
6.3.4.2	Summation of leakage currents from telecommunication network .....:	No TNV circuits	N
6.4	Protection of equipment users from voltages on the telecommunication networks		N
6.4.1	Separation requirements	No TNV circuits	N
6.4.2	Test procedure		N
6.4.2.1	Impulse test: separation between TNV-1 circuits/TNV-3 circuits and:		N
6.4.2.1 a)	unearthed conductive parts/non-conductive parts of the equipment expected to be held or touched during normal use; test at 2,5 kV		N
6.4.2.1 b)	parts and circuitry that can be touched by the test finger except contacts of connectors that cannot be touched by test probe; test at 1,5 kV		N
6.4.2.1 c)	circuitry which is provided for connection of other equipment; test at 1,5 kV		N
6.4.2.2	Electric strength test: separation between TNV-1 circuits/TNV-3 circuits and:		N
6.4.2.2 a)	unearthed conductive parts/non-conductive parts of the equipment expected to be held or touched during normal use; test at 1,5 kV	!	N
6.4.2.2 b)	parts and circuitry that can be touched by the test finger except contacts of connectors that cannot be touched by test probe; test at 1,0 kV	!	N
6.4.2.2 c)	circuitry which is provided for connection of other equipment; test at 1,0 kV	!	N
6.4.2.3	Compliance criteria		N
6.5	Protection of telecommunication wiring system from overheating		N
	Maximum continuous output current (A) .....:	No TNV circuits	N

Clause	Requirement – Test	Result - Remark	Verdict
A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N
A.1	Flammability test for fire enclosures of moveable equipment having a total mass exceeding 18 kg, and of stationary equipment		N
A.2	Flammability test for fire enclosures of moveable equipment having a total mass not exceeding 18 kg, and for materials located within fire enclosures		N
A.3	High current arcing ignition test		N
A.3.6	Number of arcs ..... :		N
A.4	Hot wire ignition test		N
A.4.6	Ignition time (s) ..... :		N
A.5	Hot flaming oil test		N
A.6	Flammability test for classifying materials V-0, V-1 or V-2		N
A.7	Flammability test for classifying foamed materials HF-1, HF-2 or HBF		N
A.8	Flammability test for classifying materials HB		N
A.9	Flammability test for classifying materials 5V		N
A	Tested material		N
	Preconditioning: 7 days (168 h); temperature (ºC) :		-
	Mounting of samples during test ..... :		-
	Wall thickness ..... :		-
	Sample 1 burning time ..... :		N
	Sample 2 burning time ..... :		N
	Sample 3 burning time ..... :		N
	Material: compliance with the requirements	No test required: UL listed material used on the plastic enclosure	N
	Manufacturer of tested material ..... :		-
	Type of tested material ..... :		-
	Additional information ..... :		-
B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS		P
B.1	General requirements		P

Clause	Requirement – Test	Result - Remark	Verdict
	Position ..... :	**M3-E16:** 4 internal fans **M3-E32:** 3 internal fans **M3-E64:** 4 internal fans (power supply is using its own, approved fan) **M3-E128:** 9 internal fans One fan operates as a cooling fan for the power supply of each model except for M3-E64	-
	Manufacturer ..... :	Several manufacturer, refer to Constructional Data Form	-
	Type ..... :		-
	Rated voltage (V) or current (A) ..... :	12Vdc	-
B.2	Test conditions	All fans approved, no further tests necessary	N
B.3	Maximum temperatures		N
B.4	Running overload test		N
B.5	Locked-rotor overload test	All fans approved	N
	Test duration (days) ..... :		-
	Electric strength test: test voltage (V) ..... :		-
B.6	Running overload test for DC motor in secondary circuits		N
B.7	Locked-rotor overload test for DC motor in secondary circuits		N
B.7.2	Test time (h) ..... :	All fans approved	N
B.7.3	Test time (h) ..... :		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Test voltage (V) ..... :		-
C	ANNEX C, TRANSFORMERS		P
	Position ..... :	(T1) on 'HPF3 Bias Board' within power supply for **'M3-E128'**; other transformers are part of certified power supplies	-

Clause	Requirement – Test	Result - Remark	Verdict
	Manufacturer ..... :	Power One	-
	Type ..... :	66051	-
	Rated values ..... :	Class B	-
	Temperatures	See appended table 5.4	P
	Thermal cut-out		N
C.1	Overload test	See clause 5.4.3	P
	Conventional transformer	See above	N
C.2	Insulation		N
	Precautions ..... :	Transformer was evaluated, sufficient materials and spacings provided	P
	Retaining of end turns of all windings		P
	Earthing test at 25 A		N
C.3	Electric strength test	See clause 5.3	N
H	ANNEX H, IONIZING RADIATION		N
	Ionizing radiation		N
	Measured radiation ..... :		-
	Measured high-voltage (kV) ..... :		-
	Measured focus voltage (kV) ..... :		-
	CRT markings ..... :		-
	Certified by ..... :		-
	Standard used ..... :		-
U	ANNEX U, INSULATED WINDING WIRES FOR USE AS MULTIPLE LAYER INSULATION		N
	See separate test report		N
1.5.1	TABLE: list of critical components		P

object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity

Clause	Requirement – Test	Result - Remark	Verdict

All Modular Switches and Switch Networks					
Line-Card Switch	Myricom	M3-SW16-8S	Minimum flammability rated V-0	--	UL
Line-Card Switch	Myricom	M3-SW16-8F (A6388-60001)	Minimum flammability rated V-0	--	UL
Line-Card Switch	Myricom	M3-SW16-8M	Minimum flammability rated V-0	--	UL
Line-Card Switch	Myricom	M3-SW16-4DM	Minimum flammability rated V-0	--	UL
Line-Card Physical-level converter	Myricom	M3-SPINE-8S	Minimum flammability rated V-0	--	UL
Line-Card Physical-level converter	Myricom	M3-SPINE-8F	Minimum flammability rated V-0	--	UL
Line-Card Switch	Myricom	M3-SW12-4L	Minimum flammability rated V-0	--	UL
Monitoring Line Card	Myricom	M3-M	Minimum flammability rated V-0	--	UL
Optical Transceiver *(on M3-SW16-8F and M3-SPINE-8F)*	Stratos	MLC-25-7-1-TL	'Laser Class I', 850nm, TTL output and 3.3Vdc power supply	EN60825-1 EN60825-2	TUV PS
Alternate optical transceiver *(on M3-SW16-8F and M3-SPINE-8F)*	Finisar Corp.	FTRJ-8519-1-2.5	'Laser Class I', 850nm, TTL output and 3.3Vdc power supply	EN60825-1 EN60825-2	TUV Rh.
Alternate optical transceiver *(on M3-SW16-8F and M3-SPINE-8F)*	Finisar Corp.	FTRJ-8522-1-2.5	'Laser Class I', 850nm, TTL output and 3.3Vdc power supply	EN60825-1 EN60825-2	TUV Rh.
Alternate optical transceiver *(on M3-SW16-8F and M3-SPINE-8F)*	Infineon	V23818-N305-L57	'Laser Class I', 850nm, TTL output and 3.3Vdc power supply	EN60825-1 EN60825-2	TUV Rh.
Alternate optical transceiver *(on M3-SW16-8F and*	Infineon	V23818-M305-L57	'Laser Class I', 850nm, TTL output and 3.3Vdc power supply	EN60825-1 EN60825-2	TUV Rh.

Clause	Requirement – Test	Result - Remark	Verdict

M3-SPINE-8F)					
Alternate optical transceiver *(on M3-SW16-8F and M3-SPINE-8F)*	E20 Comm,	EM250-L3TA	'Laser Class I', 850nm, TTL output and 3.3Vdc power supply	EN60825-1 EN60825-2	TUV Rh.
M3-E16					
Enclosure	Myricom	M3-E16	Metal	--	--
Motherboard	Myricom	08-02296	Minimum flammability rated V-0	--	UL
Power Supply	Power One	MPU150-S259	Input: 85-250V, 50/60Hz, 3A; output: 12Vdc/15A or 15V/dc/12A	IEC 60950	UL, CSA, TUV PS *CB-approv.*
Power Supply *(alternate)*	Astec	LPS 353	Input: 100-240V, 50/60Hz, 7A; output: 12Vdc/29.16A	IEC 60950	UL, CSA, VDE *CB-approv.*
Fans (4 ea)	Panasonic	FBA06A12H1A	DC 12V, 0.22A, 19.1 cfm, plastic minimum flammability rated V-0	--	UL, CSA
Control Cards for Fans	Myricom	05-02122	Minimum flammability rated V-0	--	UL
AC Inlet / EMI Filter	Corcom	3ED8	AC 120 / 250V, 3A, 50-60Hz	--	UL, CSA, VDE
AC Connector on other end of AC inlet / EMI filter, using Power One power supply	Molex	PS-08-50	250Vac, dielectric withstanding voltage: 1500Vac, mimimum flammability rated: V-0	--	UL
M3-E32					
Enclosure	Myricom	M3-E32	Metal	--	--
Motherboard / Backplane	Myricom	08-02298	Minimum flammability rated V-0	--	UL
Power Supply	Astec	LPS 353	Input: 100-240V, 50/60Hz, 7A; output: 12Vdc/29.16A	IEC 60950	UL, CSA, VDE *CB-approv.*
Fans (3 ea)	Panasonic	FBA09A12H1A	DC 12V, 0.29A, 56.8 cfm, plastic minimum flammability rated V-0	--	UL, CSA

Clause	Requirement – Test	Result - Remark	Verdict

Control Cards for Fans	Myricom	05-02122	Minimum flammability rated V-0	--	UL
AC Inlet / EMI Filter	Corcom	15ED8	AC 120 / 250V, 15A, 50-60Hz	--	UL, CSA, VDE
M3-E64					
Enclosure	Myricom	M3-E64	Metal	--	--
Motherboard / Backplane	Myricom	08-02086	Minimum flammability rated V-0	--	UL
Power Supply *(alternate)*	Astec	MP6-3L-00	Input: 100-240V, 50/60/400Hz, 10A; output: 12Vdc/50A	IEC 60950	UL, CSA, VDE *CB-approv.*
Fans (4 ea)	Panasonic	FBA09A12H1A	DC 12V, 0.29A, 56.8 cfm, plastic minimum flammability rated V-0	--	UL, CSA
Control Cards for Fans	Myricom	05-02122	Minimum flammability rated V-0	--	UL
AC Inlet / EMI Filter	Corcom	15ED8	AC 120 / 250V, 15A, 50-60Hz	--	UL, CSA, VDE
M3-E128					
Enclosure	Myricom	M3-E128	Metal	--	--
Motherboard / Backplane	Myricom	08-02087	Minimum flammability rated V-0	--	UL
Power Supply	Power One	HPF3BCB1YE	Input: 80-264V, 47-63Hz, 21A; output: 12Vdc/80A, -12Vdc/20A	EN 60950	TUV PS
DC to DC Power Supply (as part of the power supply above)	Power One	SSLP-XX	Input: 300Vdc, 500W, output: 5Vdc, 60A	IEC 60950	UL, CSA, TUV PS *CB-approv*
DC to DC Power Supply (as part of the power supply above)	Power One	DSLP-XX	Input: 300Vdc, 1060W, output: 5Vdc, 170A	IEC 60950	UL, CSA, TUV PS *CB-approv*
'Input Board' (as part of HPF3BCB1YE):					
- L2, L3 Inductor	Power One	65049	Insulation class F	--	--
- L5 Inductor	Power One	65050	Insulation class B	--	--

Clause	Requirement – Test	Result - Remark	Verdict

- L6 Inductor	Power One	65051	Insulation class B	--	--
- L1, L4 Inductor	Power One	65048	Insulation class F	--	--
- C1 (X2-) Cap	Okaya or Roederstein	PA105SC4 F1772-510-2000 F1772-510-2004	250Vac, 1uF	IEC 384-14	UL, CSA, SEV, VDE
- C27 (Y-) Cap	Roederstein	WY0472MCMBRAK	250Vac, 4700pF	IEC 384-14	UL, CSA, SEV, VDE
- C2, C3, C10 (Y-) Cap	Rifa or Wima	PME271Y510MR06 MP3-Y	250Vac, 0.01uF	IEC 384-14	UL, CSA, SEV, VDE
- C4 (X2-) Cap	Rifa or Nissei Denki	PME830MD6470M R40474M275BNS	250Vac, 0.47uF	IEC 384-14	UL, CSA, SEV, VDE
- F1 Fuse	Littlefuse	BLN25	250V, 25A “fast acting”	--	UL, CSA
- J1 connector	Amp, Inc. or Cinch	2-53066-1 50-12SN-3	250V, 5A	--	UL
- J2 connector	Amp, Inc. or Cinch	2-630666-1 50-24SN-3	250V, 5A	--	UL
- TB1 term. block	Bussmann	A307103-R50AB-CC	600V, 20A	--	UL, CSA
- S1 Thermal Switch	Airpax	67F090	90ºC	--	UL
- VR1 varistor	Harris	V250LA40B	250V, 30J	--	UL, CSA
‘Bias Sync Board’ (as part of HPF3BCB1YE):					
- Transformer (T1)	Power One	66051	Insulation class B	--	--
- C16 Cap	Rifa	PME271Y447MR04	250Vac, 4700 pF	IEC 384-14	UL, CSA, SEV, VDE
- C23, C28 Cap	Roederstein	WY0102MCMBFOK	250Vac, 1000pF	IEC 384-14	UL, CSA, SEV, VDE
- C2 Cap	Panasonic	ECQ-E2A474MW	250Vac, 0.47uF	IEC 384-14	UL, CSA, VDE
- F1 Fuse	Littlefuse	224.500	250V, 0.5A “fast acting	--	UL, CSA
- U3 Optocoupler	Motorola or QT Optoelec.	MOC8103 CNY17F3	0.5mm thick through insulation	--	UL, CSA, VDE
- J1-5 Connector	Amp, Inc.	770857-1	250Vac, 6A, minimum flammability rated V-0	--	UL, CSA
- J1 Connector	Molex	03-06-1121	250Vac, 5A, minimum	--	UL, CSA

Clause	Requirement – Test	Result - Remark	Verdict

			flammability rated V-0		
- P1 Connector	Molex	50-37-5063	250Vac, 3A, minimum flammability rated V-0	--	UL, CSA
- Chassis Fan	EBM Ind. or Sanyo Denki	W2G107-AB04-01 109E1224H102	24Vdc, 0.4A, 108cfm	IEC 60950	UL
Fans (8 ea)	Panasonic	FBA09A12H1A	DC 12V, 0.29A, 56.8 cfm, plastic minimum flammability rated V-0	--	UL, CSA
Control Cards for Fans	Myricom	05-02122	Minimum flammability rated V-0	--	UL
AC Inlet / EMI Filter	Corcom	15ED8	AC 120 / 250V, 15A, 50-60Hz	--	UL, CSA, VDE
AC Connector on other end of AC inlet / EMI filter	AMP	350766 or 350767	250Vac, dielectric withstanding voltage: 1500Vac, mimimum flammability rated: V-0	--	UL
Power Cords:					
Power Cord for Brazil, Canada South Korea, Taiwan and U.S. (all products except M3-E128)	El-Com, Cabletek	EC-0420-1	10A / 125V	IEC 320	UL, CSA
Power Cord for Brazil, Canada, Taiwan and U.S. (for M3-E128)	Feller	5522-350	15A / 125V	IEC 320	UL, CSA
Power Cord for Australia, New Zealand	Feller	2222	10A / 250V, H05VV-F3G1.0mm^2	AS/NZS 3112-1993	QAS
Power Cord for Austria, Chile, China, Czech Rep., Denmark, Finland, France, Germany, Netherlands, Norway, Poland, Portugal, Russia, Slovenia, Spain, Sweden	Feller El-Com, Cabletech	1922 EC-0439-2	10A / 250V, H05VV-F3G1.0mm^2 10A / 250V	IEC 320	VDE, N, FI, S, D

Clause	Requirement – Test	Result - Remark	Verdict

Power Cord for India	GlobTek	2084272M5701	10A / 250V, H05VVF	IEC 320	*Approval for India avail.*
Power Cord for Japan	Feller	5530-440	15A / 125V	JIS 8303	*Approval for Japan avail.*
Power Cord for Cyprus, Hong Kong, Oman, Singapore, U.K.	Feller	2922	10A / 250V (13A Fuse) H05W-F3G1.0mm^2	BS 1363	BSI
Power Cord for Italy	Feller GlobTek	3122 23024272M5701	10A / 250V, H05VV-F3G1.0mm^2	CEI 23-16	*Approval for Italy avail.*
Power Cord for Israel	Feller	3322	10A / 250V, H05VV-F3G1.0mm^2	SI 32/1971	*Approval for Israel avail.*

1.6	TABLE: electrical data (in normal conditions)	P

fuse #	Irated (A)	U (V)	P (W)	I (mA)	Ifuse (mA)	condition/status
F1	2.0	90	160	1770		**M3-E16 with 'Power One' PS**
F1		100	158	1590		
F1		120	157	1320		
F1		132	155	1190		
F1		208	147	740		
F1		240	143	640		
F1	1.0	254	143	610		
F1	2.0	90	115	1280		**M3-E16 with 'Astec' PS**
F1		100	114	1150		
F1		120	112	950		
F1		132	112	870		
F1		208	105	570		
F1		240	102	500		
F1	1.0	254	103	480		

Clause	Requirement – Test	Result - Remark	Verdict

F1	3.0	90	244	2700		**M3-E32**
F1		100	243	2460		
F1		120	239	2010		
F1		132	238	1830		
F1		208	226	1150		
F1		240	224	1010		
F1	1.5	254	225	960		
F1	6.0	90	386	4350		**M3-E64**
F1		100	381	3830		
F1		120	374	3160		
F1		132	372	2880		
F1		208	358	1810		
F1		240	353	1580		
F1	3.0	254	357	1510		
F1	12.5	90	1108	12320		**M3-E128**
F1		100	1094	10970		
F1		120	1076	9090		
F1		132	1069	8210		
F1		208	1028	5090		
F1		240	1020	4420		
F1	6.25	254	1028	4170		

2.9.2 and 2.9.3	TABLE: clearance and creepage distance measurements	P

clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	Dcr (mm)
Primary – Ground		240	2.0	>2.0	2.5	>2.5

Clause	Requirement – Test	Result - Remark	Verdict

clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	Dcr (mm)
Primary – Secondary		240	4.0	>4.0	5.0	>5.0
Within AC/DC power supply of M3-E128 ('Power One', M/N: HPF3BCB1YE)						
Q2(B) (prim) – (T1), pin 1 (sec.)		240	4.0	8.5	5.0	10.0
Q2(D) (prim) – CR15 Pad (sec.)		240	4.0	6.2	5.0	12.2
U3, pin8 (pri) – pin 1 (sec.)		240	4.0	8.2	5.0	8.2
C2 Pad (pri.) – R37 trace (sec)		240	4.0	8.4	5.0	8.8
P1 trace (pri.) – T1 2nd Pad (sec)		240	4.0	14.0	5.0	9.6
U5 trace (pri) – Mount. Pad (PE)		240	2.0	3.7	2.5	3.7

2.9.4.	TABLE: distance through insulation measurements	P

distance through insulation di at/of:	U r.m.s. (V)	test voltage (V)	required di (mm)	Di (mm)
Additional Sleeving on wiring	240 Vac		0.4	0.4
Within AC/DC power supply of M3-E128 ('Power One', M/N: HPF3BCB1YE)				
Three layers of insulation tape within (T1) for which two layers together pass the electric strength test for reinforced insulation	240 Vac	3000Vac	--	--

Note:

5.1	TABLE: temperature rise measurements		P
	test voltage (V) ..... :	90V-60Hz / 254V-60Hz	-
	t1 (ºC) ..... :	Ambient: refer to below	-
	t2 (ºC) ..... :		-

temperature rise dT of part/at:	dT (K)		required dT (K)
Normal- & Abnornmal Operating Conditions	**Normal**	**Abnormal**	

Clause	Requirement – Test	Result - Remark	Verdict

temperature rise dT of part/at:	dT (K)				required dT (K)
Model No. M3-E16' with 'Power One' Power Supply	**90V**	**254V**	**90V 1)**	**90V 2)**	
T1 (Core)	54.3	55.8	61.8	64.9	
T1 (Coil)	53.2	53.7	58.8	63.6	
RT1 - PCB	53.5	33.2	57.2	60.2	
C12 Body HS	36.8	36.6	46.7	55.2	
L9 Coil	27.9	28.4	35.6	43.3	
C10 Body	30.8	25.6	33.1	50.0	
L4 Coil	37.5	22.0	41.5	49.5	
L6 Coil	59.8	54.0	77.0	79.5	
Room Ambient	23.3°C	20.4°C	25.7°C	23.1°C	
Model No. M3-E16' with 'Power One' Power Supply	**90V**	**254V**	**90V 1)**	**90V 2)**	
T1 (Coil)	30.6	31.4	54.5	65.5	
T1 (Core)	31.8	32.5	56.3	65.5	
THR1 - PCB	15.6	12.1	42.6	54.4	
L6 Coil	13.7	11.6	35.9	49.7	
Q5 PCB next to HS	16.0	16.5	32.7	47.5	
C14 body	11.8	11.9	37.0	53.7	
DB1 body	27.0	16.1	54.3	58.6	
Room Ambient	23.3°C	20.4°C	23.3°C	23.1°C	
Model No. M3-E32'	**90V**	**254V**	**90V 1)**	**90V 2)**	
T1 (coil)	32.3	32.6	75.6	66.0	
T1 (core)	32.6	32	75.3	62.5	
THR1 PCB	7.5	4.7	40.3	55.7	
L6 (coil)	5.7	4.0	27.3	49.8	
L4 (coil) in box	5.3	3.2	41.9	44.4	
C14 Body	9.6	9.8	46.1	61.2	
DB1	15.1	7.2	51.0	63.1	
Room Ambient	23.3°C	20.4°C	23.3°C	23.1°C	
Model No. M3-E64'	**90V**	**254V**	**90V 1)**	**90V 2)**	
L201	16.3	12.0	24.3	42.9	
T1 (Core)	9.9	9.8	16.8	37.1	
T1 (Coil)	13.2	12.8	20.1	40.4	
C210	9.1	8.4	17.5	38.6	
BR401	39.2	18.3	46.8	56.8	
THR401	10.4	8.9	18.0	37.1	
L402	18.2	9.7	26.2	39.7	
Room Ambient	25.7°C	25.6°C	26.8°C	28.8°C	

Clause	Requirement – Test	Result - Remark	Verdict

temperature rise dT of part/at:	dT (K)				required dT (K)
Model No. M3-E128'	**90V**	**254V**	**90V 1)**	**90V 2)**	
L6 (coil)	22.8	10.6	40.1	50.0	
L5 (coil)	25.5	15.7	41.1	50.9	
C26 body	0.8	0.3	10.5	20.3	
T1 (core)	9.2	10.4	21.7	31.1	
T1 (coil)	4.1	5.2	16.5	26.0	
T2 (core)	16.1	16.5	30.8	38.9	
RT2	3.0	2.5	15.4	24.3	
T4 (core)	14.8	16.2	29.7	35.9	
L3 (coil)	28.0	9.0	46.9	54.2	
Room Ambient	28.8 °C	27.2 °C	26.2 °C	26.9 °C	

see below

temperature rise dT of winding:	R_1 ()	R_2 ()	dT (K)	required dT (K)	insulation class

All measured with thermo-couplers; Limits calculated for the specified max. ambient temperature of 40°C; Abnormal Condition 1): 'Air out' vent blocked, 2): 'Air Intake' vent blocked.

5.3	TABLE: electric strength measurements	P

test voltage applied between:	test voltage (V)	breakdown
Model No. M3-E16' with 'Astec' power supply		
Primary and ground	2,121 Vdc	No
Model No. M3-E16' with 'Power One' power supply		
Primary and ground	2,121 Vdc	No
Model No. M3-E32'		
Primary and ground	2,121 Vdc	No
Model No. M3-E64'		
Primary and ground	2,121 Vdc	No
Model No. M3-E128'		
Primary and ground	2,121 Vdc	No
Primary and Secondary (J1-J5 of power supply) ***)**	3,000 Vac	No

Clause	Requirement – Test	Result - Remark	Verdict

test voltage applied between:	test voltage (V)	breakdown
Secondary (J1-J5 of power supply) – Ground ***)**	1,373 Vdc	No
Transformer (T1): primary and secondary	3,000 Vac	No
Transformer (T1): primary and core	1,500 Vac	No
Transformer (T1): primary and secondary	1,500 Vac	No

***)** During the test, the input module caps (C2, C3, C10, C27) and the Bias Sync Caps (C16, C23 & C28) of the power supply were removed

5.4	TABLE: fault condition tests		P
	ambient temperature (°C) ..... :	24	-
	model/type of power supply ..... :	refer to CDF	-
	manufacturer of power supply ..... :		-
	rated markings of power supply ..... :		-

temperature rise dT of part/at:	dT (K)	required dT (K)

refer to table 5.1 for blocked vents / disconnected fans temp. tests
Electric Strength Test (as per 5.3, refer to above) passed right after the test.

No.	component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
1	M3-SW16-8S (all connector pins)	OV / S	254 Vac	1 sec.			Voltages measured at all pins is less than 20 mV, no hazards
2	M3-SPINE-8S (all connector pins)	OV / S	254 Vac	1 sec.			Voltages measured at all pins is less than 9 mV, no hazards
3	M3-M (all connector pins)	OV / S	254 Vac	1 sec.			Ethernet connection only, no hazards
4	M3-SPINE-8F	OV / S	254 Vac	1 sec.			Optical transceiver 'Laser Class 1' only, no hazards
5	M3-SW16-8F	OV / S	254 Vac	1 sec.			Optical transceiver 'Laser Class 1' only, no hazards

Clause	Requirement – Test	Result - Remark	Verdict

6	M3-SW16-4L (pins: 2,3,6,7, 11,12,15,16)	OV / S	254 Vac	5 sec.			All pins individually measured with a voltage of 1.746V; max. current draw was 0.17 mA when all pins where tied together and shorted to GND, no hazards
7	M3-SW16-4L (pin: 10)	OV / S	254 Vac	5 sec.			1.746V; max. current draw was 0.22 mA when shorted to GND, no hazards
	Model No. M3-E128', power supply:						
8	Input Board, C28	S	254 Vac	5 sec.			Fuse (F1) opened, Q1 – Q14 shorted, no hazard
9	Input Board, Q1 (E-C)	S	254 Vac	5 sec.			Fuse (F1) opened, Q1 – Q14 shorted, no hazard
10	Input Board, C5	S	254 Vac	5 sec.			Fuse (F1) opened, no hazard
11	Input Board, CR8	S	254 Vac	1 sec.			Fuse (F1) opened, Q1 – Q14 shorted, no hazard
12	Input Board, C2	S	254 Vac	1 sec.			Fuse (F1) opened, no hazard
13	Input Board, CR5	S	254 Vac	5 sec.			Fuse (F1) opened, Q1 – Q14 shorted, no hazard
14	Input Board, CR6	S	254 Vac	1 sec.			Fuse (F1) opened, Q1 – Q14 shorted, no hazard
15	Input Board, Q2 (D-S)	S	254 Vac	1 sec.			Fuse (F1) opened, Q1 – Q14 shorted, no hazard
16	Bias Sync Board, C2	S	254 Vac	5 sec.			Fuse (F1) on Input Board opened, no hazard
17	Bias Sync Board, CR23	S	254 Vac	1 hr			No Change, unit operated normal, temp. of (T1) increased to 50ºC, no hazard
18	Bias Sync Board, CR14	S	254 Vac	1 min.			Fuse (F1) on Bias Sync Board opened, no hazard
19	Bias Sync Board, P3 (pins 1 & 2)	S	254 Vac	5 sec.			Fuse (F1) on Bias Sync Board opened, no hazard

Clause	Requirement – Test	Result - Remark	Verdict

OV: overload; S: short; O: open
Supplementary information
After all tests, the 'Hipot'-test according to table 5.3 was performed

5.4.10	TABLE: ball pressure test of thermoplastics		N
	required impression diameter (mm) .....:	2 mm	-
part		test temperature (ºC)	impression diameter (mm)

CENELEC Common modifications and **Group differences** S=Special National condition, D=National differences, F=Other information, AT=Austria, GB=Great Britain, CH=Switzerland, DE=Germany, DK=Denmark, FI=Finland, FR=France, NO=Norway, SE=Sweden.			P
1.7.2	Delete note 4.		Deleted
2.1.3.1	Table 0, first column, replace "Over 50" by "Over 350".		Replaced.
2.3.3	Delete Method 4 and the line in note 1 relating to this method		Deleted.
2.3.6	Delete the note.		Deleted.
2.3.7	Replace the text of this sub-clause by: Void.		Replaced.
2.5.2	Delete the note.		Deleted.
2.7.1	Replace the text of this sub-clause.		Replaced.
2.7.2	Replace the text of this sub-clause by: Void.		Replaced.
2.8.4	Delete the note.		Deleted.
2.9.4.2	Solvent based enamel coating.	This material was not considered for insulation system.	
2.9.4.4	replace the first paragraph and the 2 dashed paragraphs.		Replaced
2.11	Delete notes 1,2 and 3.		Deleted.
3.2.2	Delete the note and in table 10, delete the value in parentheses.		Deleted.
3.2.4	Replace:		Replaced

Clause	Requirement – Test	Result - Remark	Verdict
	"245 IEC 53" by "H05 RR-F", "227 IEC 52" by "H03 VV-F or H03 VVH2-F" and "227 IEC 53" by "H05 VV-F or H05 VVH2-F". In table 11, replace the first four lines.		
3.3.5	In table 13, replace the fourth and the fifth lines by : Over 10 up to and including 16 1.5 to 2.5 1.5 to by 4		Replaced.
4.4.4	Delete note 2.		Deleted.
6.2.1.2 6.2.1.3	Add at the end of each sub-clause: This sub-clause only applies to TNV circuits normally operating in excess of the limits of SELV circuits.		Added
6.2.1.4	Delete notes.		Deleted
6.4.1	Delete note 2.		Deleted
6.4.2.1	Delete note 2.		Deleted
Annex P	Replace the text of this annex by: See annex ZA.		Replaced.
Annex Q	Add for IEC 529: Note: Endorsed by EN 60529:1991 (not modified) Add for IEC 707 Note: Endorsed by HD441:1983 (not modified) Add for IEC 1058-1: Note: Endorsed by EN 61058:1992 (not modified).		Added.
Australian Deviations AS/NZS 3260			P
general	Add.: “TT power systems are not permitted in Australia”.	Considered	-
1.5.1/ 1.5.2	Components comply with IEC or relevant Australian Standards	All safety critical components are certified; plastic materials, PCBs and wiring material are UL listed, non-certified components were tested according this standard	P
1.7.14	Language of manuals	User manual / installation instructions provided in English language	P
2	Limit of direct current from a.c. appliances.	AC power supply is provided with isolation transformer	N
3.2.2	Substitute for table 10: For sizes of cables and	Appliance Inlet used	N

Clause	Requirement – Test	Result - Remark	Verdict
	conduits refer to AS 3000.		
3.2.4	Apply Substitute for table 11	(see 3.2.2)	N
4.3.18	Direct plug in equipment shall comply with AS/NZS 3112.	(see 3.2.2)	N
4.4.1	For the Australian alternative resistance to fire test, refer to Appendix 2.	Not applied	N
6.3.3.2	marking for equipment to be installed by service personnel.	No TNV	N
6.4.2	compliance with 6.4.1 is checked by both the test of 6.4.2.1 and 6.4.2.2	No TNV	N
6.4.2.1	Replace Clause 6.4.2.1.	(see 6.4.2)	P
6.4.2.2	Replace Clause 6.4.2.2.	(see 6.4.2)	P
Annex A	Add. after Annex title: Alternative resistance to fire test-determination if ignitability and combustion propagation	Not applied for this Appendix	N
Appendix 2	Add. Appendix	Not applied	N
X2.0	GENERAL This test is an alternative to the tests in Annex A to allow approval of equipment which has inadequate documentation to verify having been tested to Annex A.	Not applied	N
Appendix 3	Add Appendix: D.C. COMPONENTS FROM A.C. EQUIPMENT	Refer to above, the AC power supply is provided with an insulation transformer	N
ÖVE EN 60950 Special National conditions, National differences for **Austria**			P
6.4.2.1 D	Equipment shall comply with Uc = 2.0KV in cases b) and c).	No TNV	N
CAN/CSA C22.2 No. 950/UL 1950 third ed. Based on IEC 60950 2nd ed. Including A1-4 National deviations **US and Canada** The following US national deviations are based on the requirements of the US National Electrical Code (NEC) ANSI/NFPA 70-1993.			P
1.1.1	Equipment installations	Product has to be installed to comply with requirement in accordance with the National Electrical Code (NEC) and the Canadian Electrical Code (CEC) part 1 CAN/CSA C22.1, ANSI/NFPA 70, and unless marked or otherwise identified, the Standard for Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.	P

Clause	Requirement – Test	Result - Remark	Verdict
1.7.1	Special marking for equipment for use on supply systems with a neutral and more than one phase conductor.	Product has only one phase conductor	N
	A voltage rating exceeding an attachment plug cap rating.		N
2.5.9	Terminals for permanent wiring	Not for permanent wiring	N
2.5.11	The capacity of the connection between is required to comply with CAN/CSA C22.2 No. 0.4.	refer to clause 2.5.11 of main body of the report	N
2.6.2	Motor control devices.	no motors in this category	N
2.6.8	Vertically mounted disconnect switches and circuit breakers.	Appliance Inlet is disconnect device	N
2.6.11	Computer room applications, equipment with battery systems.	No battery.	N
2.7.1	Suitable NEC/CEC branch circuit for standard supply outlets and lampholders.	No such components.	N
	Power distribution transformers require overcurrent protection.	No such components.	N
	Panelboards are required to have suitable overcurrent protection.	No such components.	N
2.7.6	Fuses provided in neutral.	Only one fuse in ‘line’	N
3.1.12	External interconnecting flexible cord and cable over 2m.	No such cable.	N
3.2	Wiring methods shall be in accordance with the NEC and CEC.	Wiring methods are in line with NEC and CEC	P
3.2.1	Plugs have to be rated 125% of the equipment current rating.	Plug on power cord sufficiently rated with minimum 10A and 15A for M/N: ‘M3-E128’, respectively	P
3.2.2	Permanent connection of equipment to the mains by a power supply cord is not permitted.	No permanent connection to mains	N
3.2.4	Power supply cords.	Power supply cord for the U.S. / Canada less than 4.5m long	P
3.2.8	Permanently connected equipment is required to have a suitable wiring compartment and wiring bending space.	Equipment not permanently connected to AC mains	N
3.3	Wiring terminals shall comply with CSA C22.2 No. 0.	No wiring terminals for AC mains connection	N
3.3.3	Wire binding screws are not permitted to attach supply conductors larger than 10 AWG (5.3mm²).	See 3.2.1 of main body of the report	N
4.3.12	Equipment with lasers is required to meet Code of Federal Regulations 21CFR 1040 and Canadian Radiation Emitting Devices Act, REDR C1370.	CDRH-Report for Optical Transceiver has to be provided by customer for US Approval.	P

Clause	Requirement – Test	Result - Remark	Verdict
4.4.1	Automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	No equipment of this type.	N
4.4.4	Flame spread rating.	No equipment of this type.	N
4.4.8	The maximum quantity of flammable liquid stored in equipment is required to meet NFPA 30.	No flammable liquid.	N
The following national differences are based on the requirements other than national regulatory requirements:			
1.5.1	Some components are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements.	See main body of test report, list of critical components, table 1.5.1	P
3.4	Equipment connected to a centralized d.c. power system is required to meet special earthing, wiring and marking requirements.		N
4.1.6	Wall and ceiling mounted equipment is required to comply with special loading tests.	Not for wall or ceiling mounting	N
4.1.7	Equipment with handles is required to comply with special loading tests.	Loading test performed	P
4.2.9	Enclosures around CRT's with a face area of 160mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRT.	N
4.3.18	Direct plug-in equipment's required to comply with UL 1310 or CAN/CSA C22.2 No. 223 mechanical assembly requirements.	Not for direct plug-in	N
6.2.1.1	The maximum acceptable TNV circuit levels for other than ringing signals are: normal conditions: $(U_{ac}/42.4 + U_{dc}/42.4)<=1$ for $U_{dc}<=21.2$ $(U_{ac}/32.8 + U_{dc}/60)<=1$ for $U_{dc}<=21.2$ abnormal conditions: $(U_{ac}/70.7 + U_{dc}/120)<=1$	No TNV	N
6.4.3	Equipment connected to a telecommunication network and supplied with an earphone intended to be held against the ear is required to comply with special acoustic pressure tests.	See 6.2.1.1 above	N
6.4.4	Equipment intended to receive telecommunication ringing signals is required to comply with special leakage current measurement tests.		N
6.5	Equipment intended to provide power over the telecommunication wiring system .		N
6.6	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage.		P
SB 137 Special National conditions, National differences for **Denmark**			P

Clause	Requirement – Test	Result - Remark	Verdict
1.2.4.1 S	Certain types of Class I appliances (see § 3.2.1) may be provided with a plug not establishing earthing continuity when inserted into Danish socket-outlets.	Refer to list of critical components in main body of report, detachable power cord is establishing earthing continuity when inserted into socket-outlet	P
1.7.2 D	Supply cords of Class I appliances without a plug, must be provided with a visible tag .	Supply cord is with plug	N
1.7.5 S	Socket-outlets for providing power to other appliances.	No socket outlet.	N
1.7.5 D	Class II appliances shall not be fitted with socket-outlets for providing power to other appliances.	Class I type.	N
2.5.2 S	add after the first paragraph: " The above exception is not acceptable in Pluggable equipment type A "	Class I type	N
3.2.1 S	Types of plugs	See 1.2.4.1	P
SFS-EN 60950 Special National conditions, National differences for **Finland**			P
6.2.1.4b S	This method is only permitted for permanently connected equipment or for pluggable equipment type B.	No TNV	N
Special National conditions, National differences for **France**			P
2.3.3.2 S	(FR). Method 3 is not acceptable.	Method 3 not used	N
DIN EN 60950 Special National conditions, National differences for **Germany**			P
1.7.14 D	Instruction relating to safety have to be in German. Instructions for use by service personnel are not exempted.	Instructions relating to safety will be provided in German language once product is distributed to this country	N
Annex H. D	X-ray emission sources have to comply with the X-Ray ordinance.	No CRT	N
BS EN 60950 Special National conditions, National differences for **Great Britain**			P
3.2.1 S	Plug type	Power cord / plug is according to BS 1363/A	P
3.2.4 S	Conductor seizes for equipment with rated current over 10 A and up to and including 13 A.	Conductor Size is 1.0 mm^2	P
3.2.5 S	Terminal seizes for equipment with rated current over 10 A and up to and including 13 A.	No terminals	N

Clause	Requirement – Test	Result - Remark	Verdict
4.3.18 S	This test should be performed using an appropriate socket-outlet with an earthing contact.	Equipment not for direct plug-in	N

J 60950 **Japanese deviations**			P
General	Replace “CLASS I EQUIPMENT” with “CLASS I or CLASS OI EQUIPMENT” in clauses 2.3.2 / 2.5.1 / 2.5.4 / 2.7.4 / 2.7.6 / 4.3.20 / 5.4.9 / 6.3.2		replaced
1.3.3	Add additional protection class “Class OI”.		added
1.5.1	Components shall comply either with IEC standards or with the relevant technical requirements of MITI Ordinance No.85.”	All safety critical components are certified, plastic materials, PCBs and wiring material are UL listed, non-certified components were tested according this standard	P
1.5.2	Replace the requirements except 4th Item.	Checked according to the replaced requirements. See 1.5.1 also.	P
1.7.1	Replace NOTE 2		replaced
1.7.2	Delete Notes 1, 2 and 4	(Not applied Notes 1, 2, and 4.)	deleted
1.7.5 / 2.1.2	Replace “IEC 83” with “IEC 83 or JIS C 8303”		replaced
1.7.101	Indication for CLASS OI EQUIPMENT	See 1.3.3 above	N
2.3.4	Replace “IEC83 or IEC 320” with “IEC 83, JIS C 8303 or IEC 320” in the last item.		replaced
2.5.101	Plug with an earthing lead wire shall not be used for the equipment having a rated voltage exceeding 150V.	Refer to list of critical components, power cord does not have an earthing lead wire	P
	Earthing lead wire provided in plug shall not be earthed by using a clip.		P
2.9.2.1/2.9.2.2	In Table 3/5, the 1st column is not valid (supply voltage ≤ 150V)	Clearance distance from column 2 taken (≤ 300V), refer to main body of test report, table 2.9.2/2.9.3	P
2.9.4.4	Replace all text in this clause. (Shall comply with Japanese standard text.)	Refer to clause 2.9.4.4 of main body of test report	N
3.2.2	- Delete the values specified in parentheses of Table 10	these values were not applied	deleted
3.2.4	Add the requirements regarding to MITI Ordinance No.85 in first and second items.	Refer to list of critical components, power cord for Japan is VCTF; 3x2.00mm^2 and according to standard JIS 8303	P
	Delete the condition 1) in Table 11.		deleted

Clause	Requirement – Test	Result - Remark	Verdict
	Add NOTE 2 after NOTE.		added
3.3.8	PE terminals for class 01 equipment	Detachable power cord used	N
4.3.9	Construction of CLASS OI EQUIPMENT	See 3.3.8 above	N
4.3.12	Add NOTE: only LEDs working under the laser principle are to be applied IEC 60825-1.	Not applied to LEDs.	N
4.4.3.2	Thin materials	not used	N
5.1	Synthetic rubber or PVC insulation of internal and external wiring without T-Marking: 50K with T-marking: T-25	Internal wiring rated with 105degC. other wiring complies with MITI Ordinance No. 85:1962, Appendix 4: 1.1.2, detailed rule (3)".	P
	Add the requirement to condition 5): "For part 1, limits are given in MITI Ordinance No. 85:1962, Appendix 4: 1.1.2, detailed rule (3)."		added
5.2.2	limits for CLASS OI EQUIPMENT	Refer to clause 5.2.2 of main body of the report	P
5.3.2	replace NOTE 1		replaced
6.3.4.2	Delete		deleted
Annex A A.101	Thin sheet material shall comply with ISO 9773.	No thin sheet material used	P
Annex G G.2	limits for CLASS OI EQUIPMENT	Refer to clause 5.2.2 of main body of the report	P
Annex M M.1	Replace the sentence.		replaced
Annex U	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION	clause replaced; no insulated winding wires for use without interleaved insulation used	N
Korean Deviations			P
General	When an appliance is supplied in Korea, it shall be set to and marked with 220V.	Equipment properly marked	P
General	When an appliance is supplied in Korea, it shall be set to and marked with 60Hz.	Equipment properly marked	P
General	Instruction manuals and appliance markings related to safety, including nameplate, shall be in Korean or graphical symbols in IEC 417.	Safety related instructions are in English language only, Korean language to be provided once product is distributed in Korea	N
1.5.101	Add.: Plugs for the connection of the apparatus to the supply mains shall comply with the Korean requirements (KSC 8305).	Power supply cord not provided for Korea, end user to comply with requirement	N
7	Add.: The equipment shall comply with CISPR	Equipment tested according	P

Clause	Requirement – Test	Result - Remark	Verdict
	requirements.	to 'EN'-standards for Europe	
NEK-EN 60950 Special National conditions, National differences for **Norway**			P
1.6.4	Note 2: Capacitors are to be rated for the phase to phase voltage.	Considered in power supply	P
1.7.2 S	Marking for network equipment.	Equipment not intended for network connection	N
2.3.5 S	Marking and insulation requirements according to this annex, subclauses 1.7.02 and 6.2.01.4 b) apply.	considered	N
2.5.2 S	add after the first paragraph: " The above exception is not acceptable in Pluggable equipment type A "		added
2.9.1 S	Due to the IT power systems used, the mains supply voltage is considered to be equal to the phase-to-phase voltage.	Considered	N
5.4.9 S	The electric strength test after the tests of 5.4.4, 5.4.5, 5.4.6, 5.4.7 and 5.4.8 includes testing of basic insulation in Class I equipment.	Basic Insulation within approved power supplies; power supply of M/N: 'M3-E128' was properly tested	P
6.2.1.2	Supplementary insulation for 230V between TNV and PE/ grounded SELV	Reinforced insulation within power supply	N
6.2.1.4b S	Insulation between parts conductively connected to the supply mains and parts connected to a public telecommunication network shall comply with the requirements for double or reinforced insulation.	No TNV	N
6.2.1.5 S	Requirements in 6.2.1.4, Note 2, apply		N
6.3.3. S	6.3.3 is applicable for pluggable equipment type A and B and for permanently connected equipment		N
6.3.3.2	Note 1: Exclusions apply only to permanently connected equipment and pluggable type B equipment.		N
SS337 Special National conditions, National differences for **Singapore**			N
general	IT Power Systems are not allowed.	Equipment not evaluated for Singapore	N
2.2.3	The conditions of IEC 68-2-3 for tropical climate apply.		N

Clause	Requirement – Test	Result - Remark	Verdict
SS-EN 60950, 5th ed. Special National conditions, National differences for **Sweden**			P
1.5.1 D	NOTE: Switches containing mercury are not allowed.	No switches containing mercury	P
1.7.2 S	Marking for network equipment “Apparaten skall anslutas till jordat uttag när den ansluts till ett nätverk”.	Equipment not intended for network connection	N
6.2.1.2	Supplementary insulation for 230V between TNV and PE/ grounded SELV	No TNV	N
6.3.3.1	6.2.1.2 of annex ZB applies.	No TNV	N
SN EN 60950 Special National conditions, National differences for **Switzerland**			P
1.7.17 D	Annex 4.10 of SR 814.013 applies for batteries.	No batteries uses	N
3.2.1 S	Plug type.	No power cord provided for Switzerland	N
6.1 S	Protective means in shall not interfere with the telecommunication network from operating properly.		considered

END OF TEST REPORT

Copy of Rating Labels

Myricom

Myrinet M3-E32

TÜV Rheinland of North America, Inc. C US

This device complies with Part 15 of FCC Rules and all Class A requirements for digital apparatus of the Canadian Interference Causing Equipment Regulations. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CE

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A

Made in U.S.A. from domestic and foreign components

Myricom M3-E16

100-127/200-240 V~
2.0/1.0 A, 50/60 Hz
Aparaten skall anslutas till jordat näuttag

Myricom M3-E32

100-127/200-240 V~
3.0/1.5 A, 50/60 Hz
Aparaten skall anslutas till jordat näuttag

Myricom M3-E64

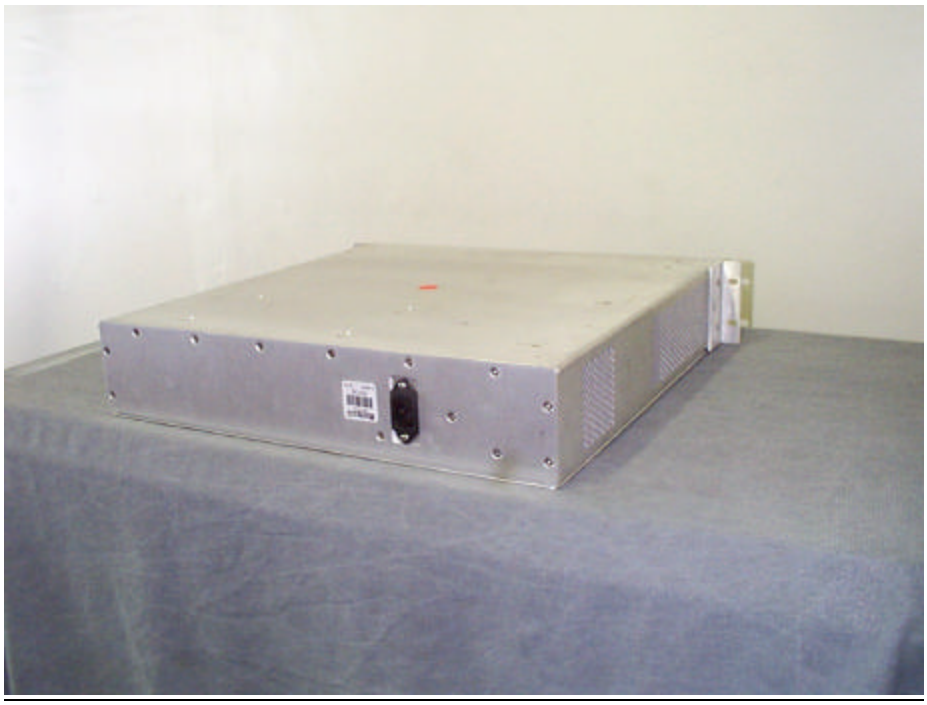
100-127/200-240 V~
6.0/3.0 A, 50/60 Hz
Aparaten skall anslutas till jordat näuttag

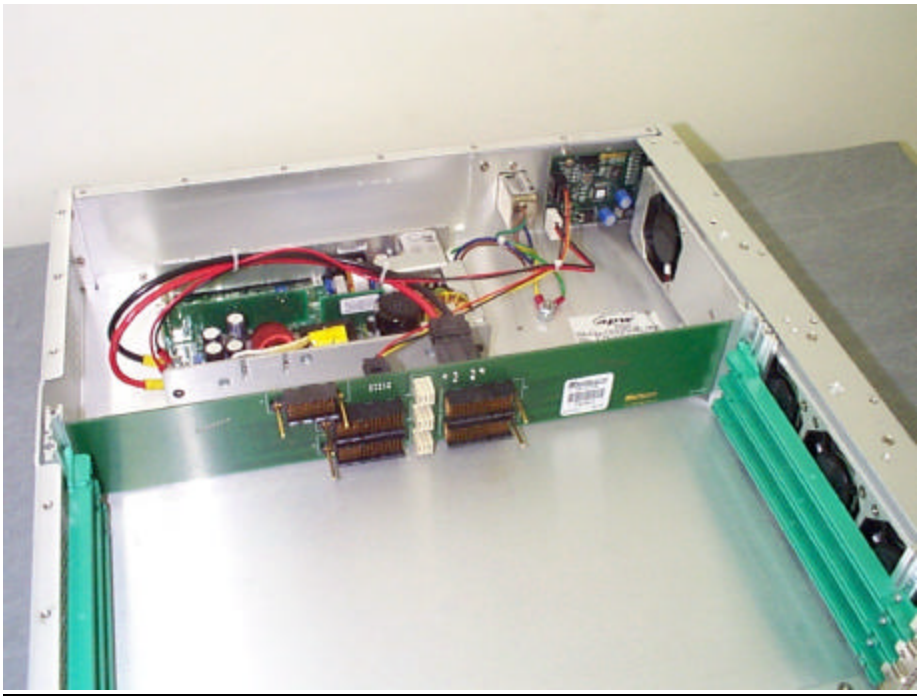
Myricom M3-E128

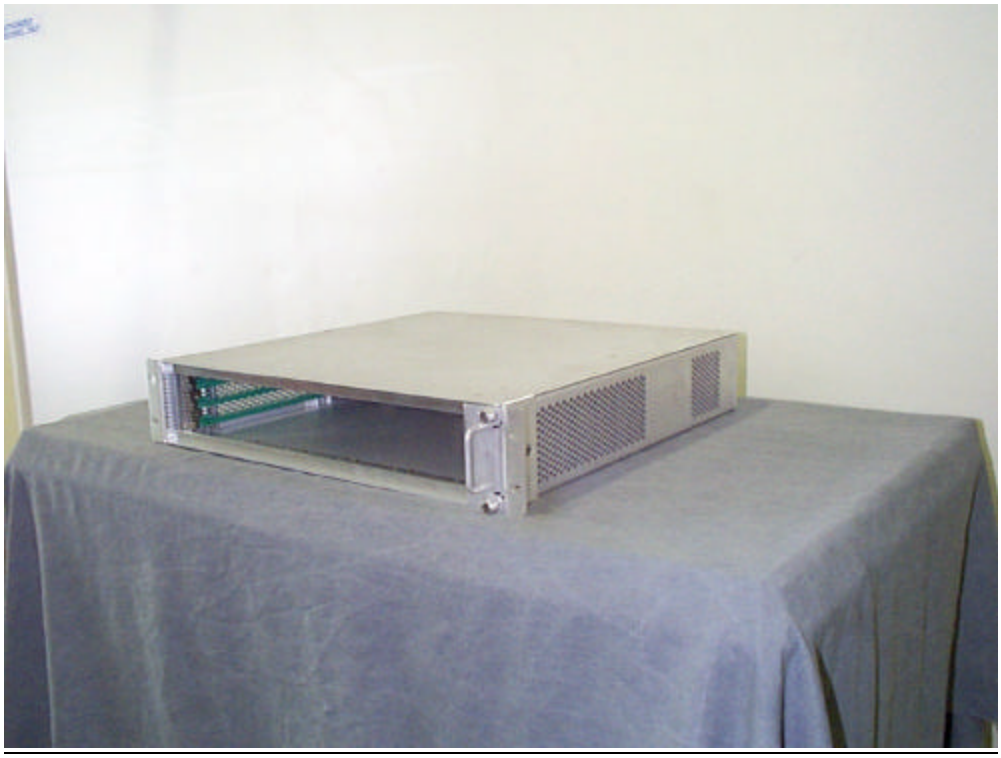
100-127/200-240 V~
12.5/6.25 A, 50/60 Hz
Aparaten skall anslutas till jordat näuttag

Photographs of Test Samples

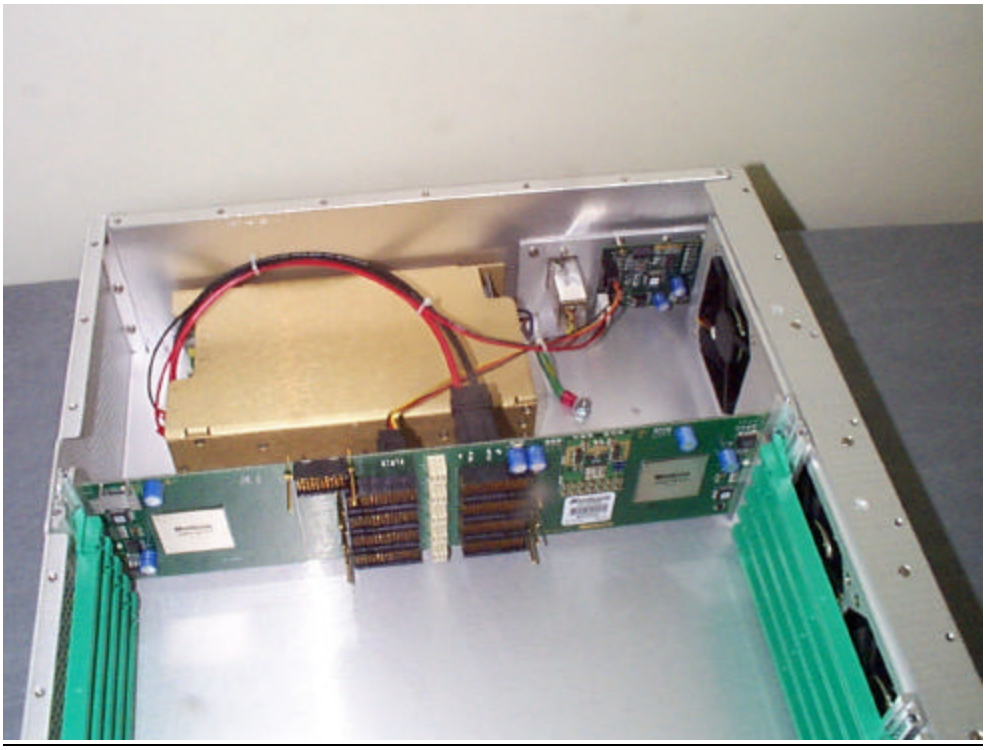
M3-E16

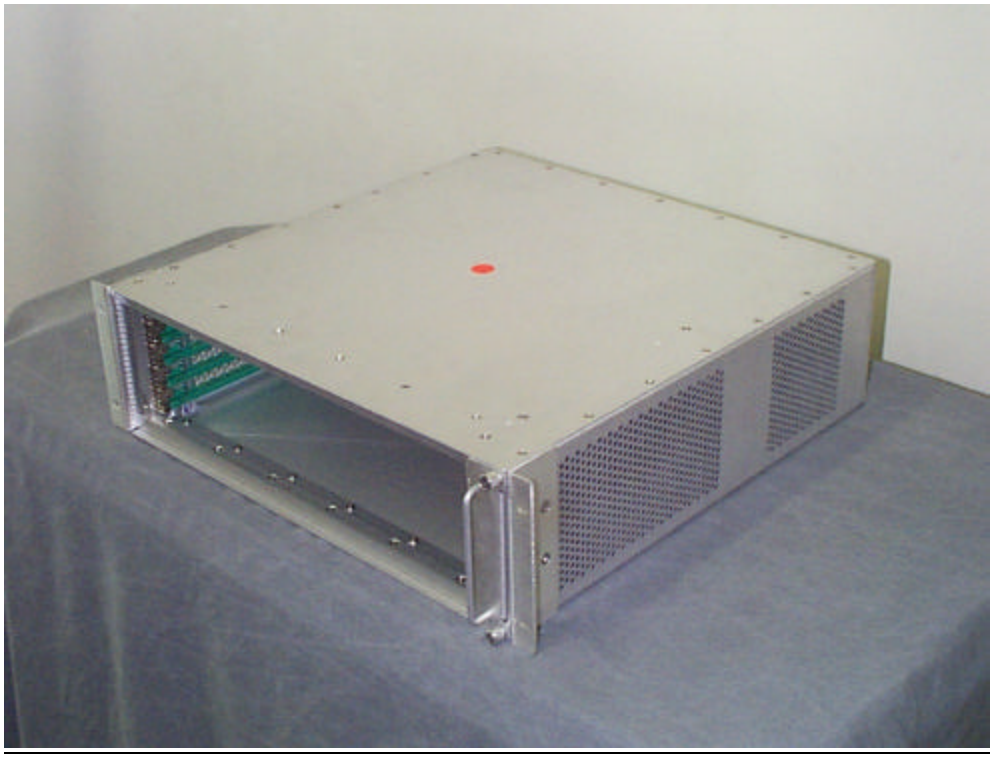


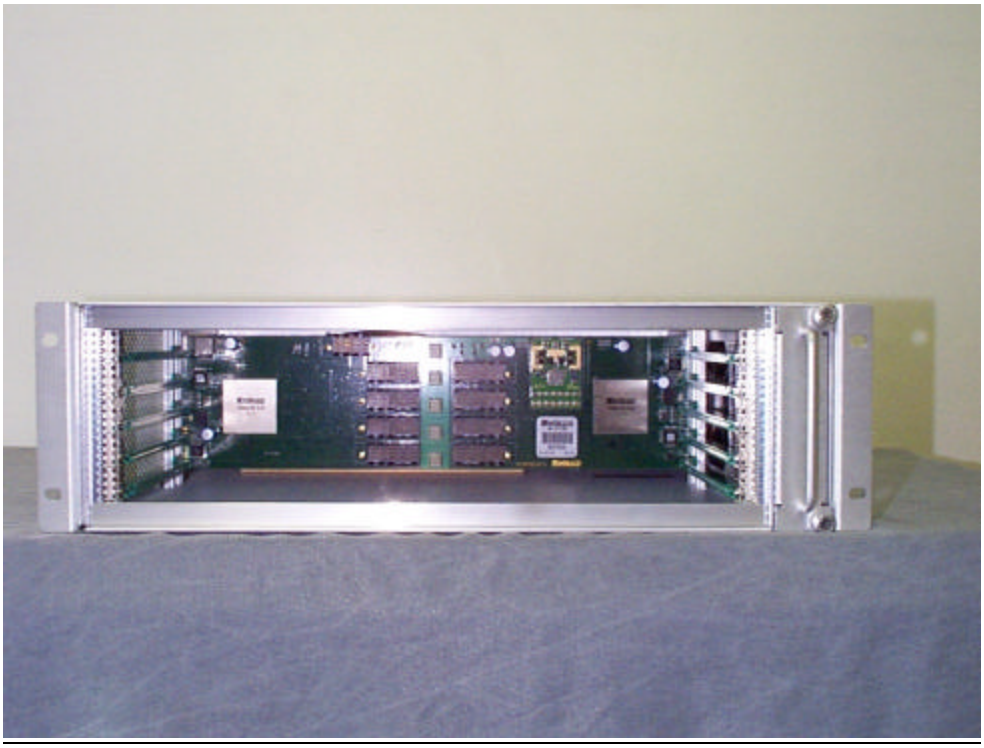




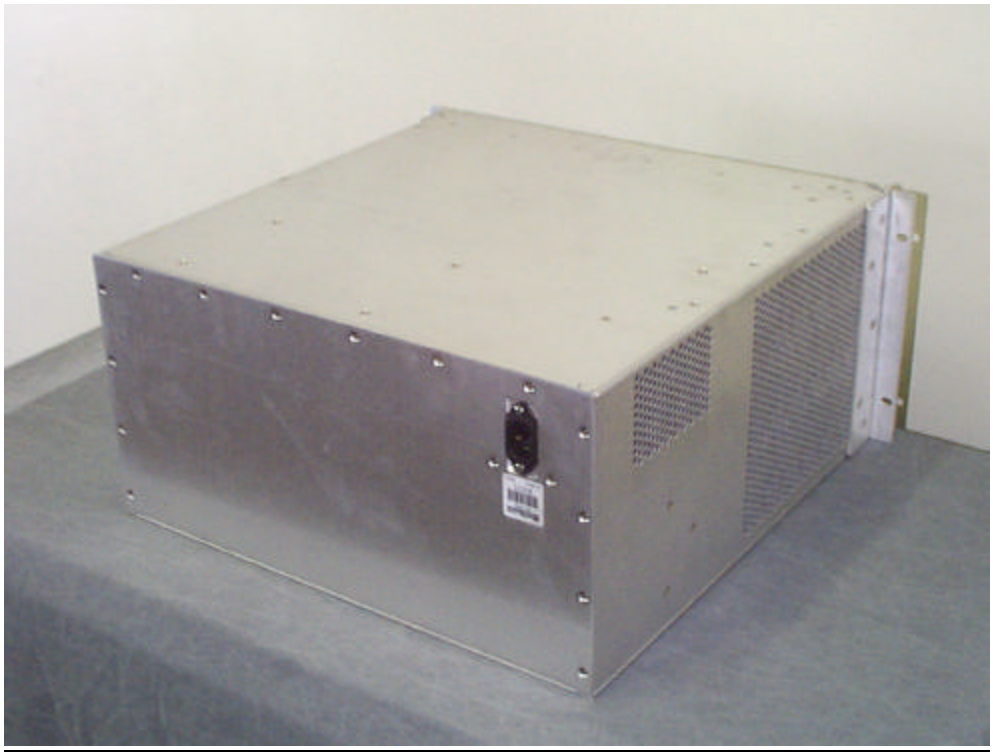
M3-E32

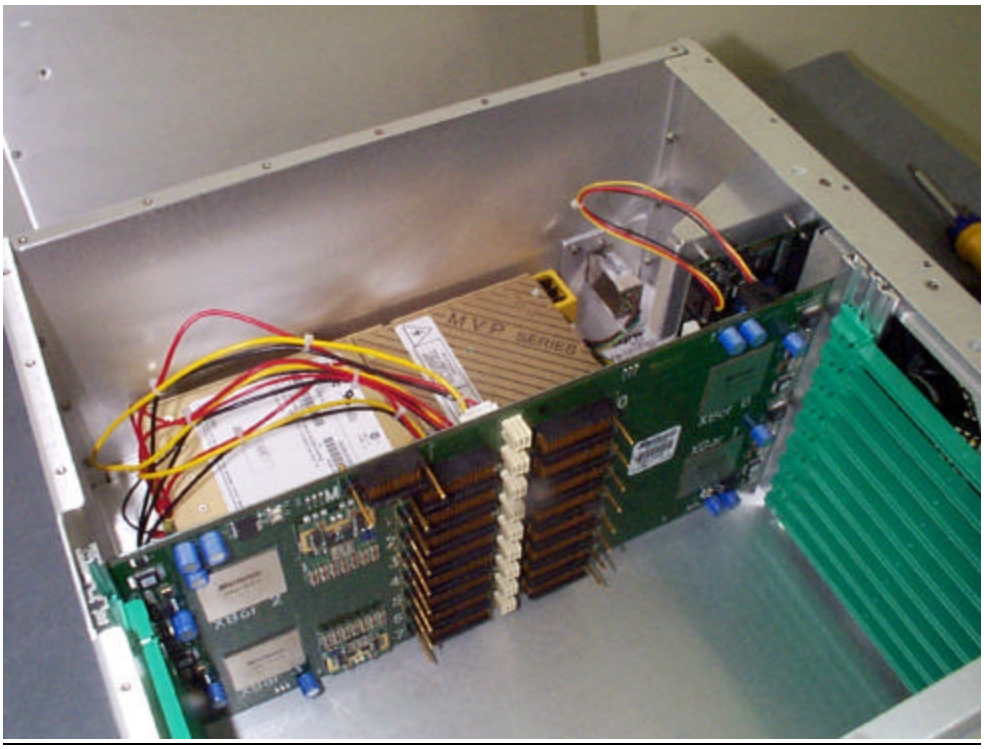


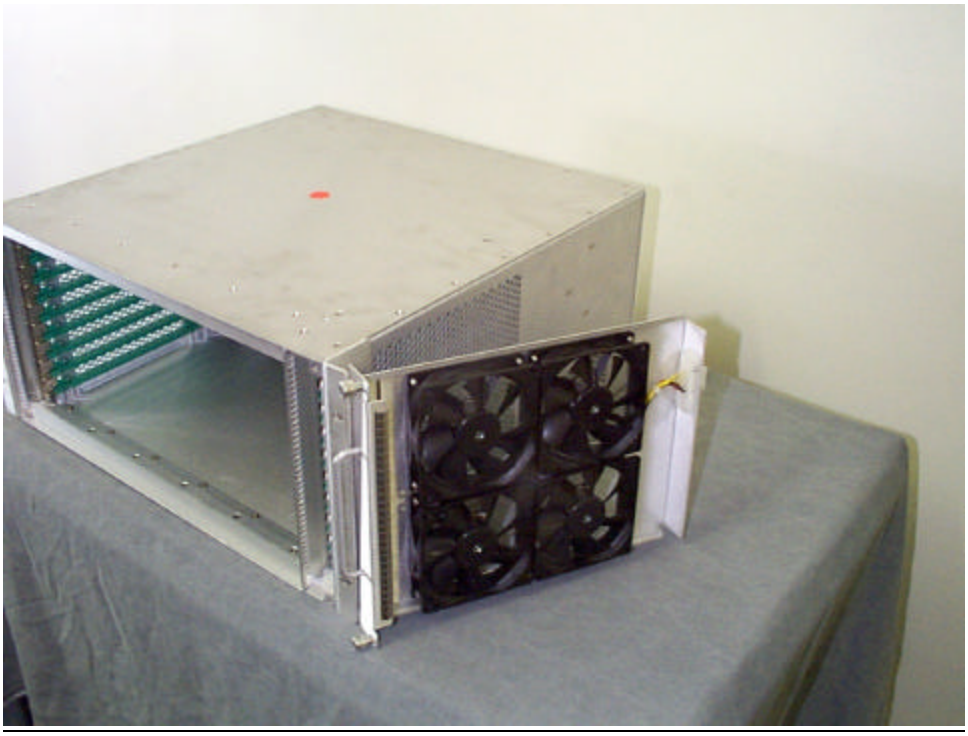


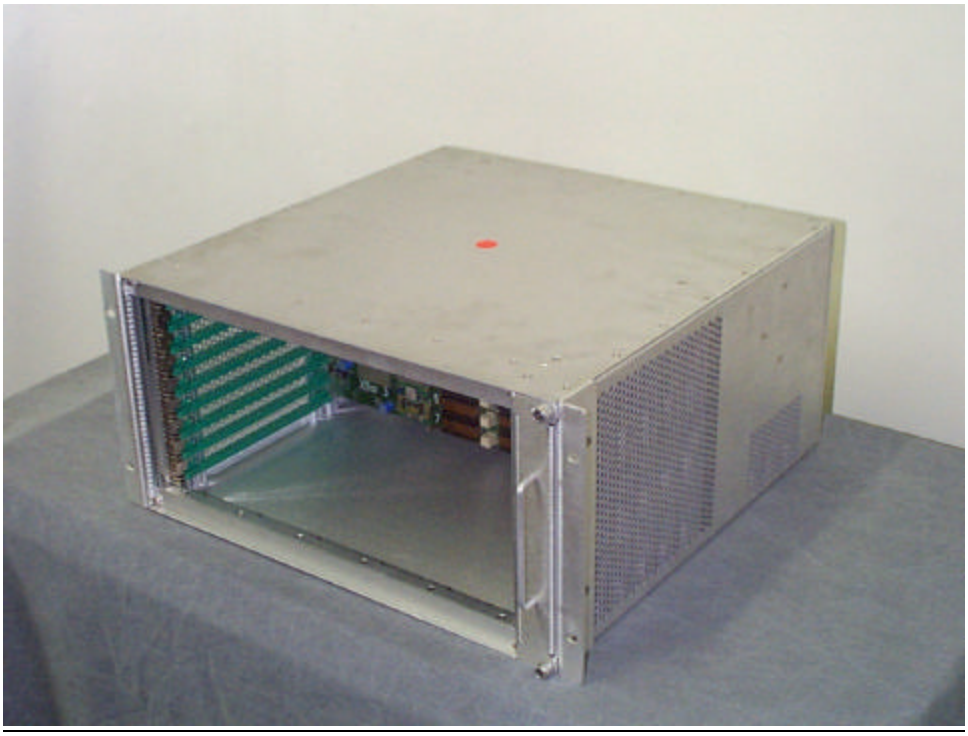


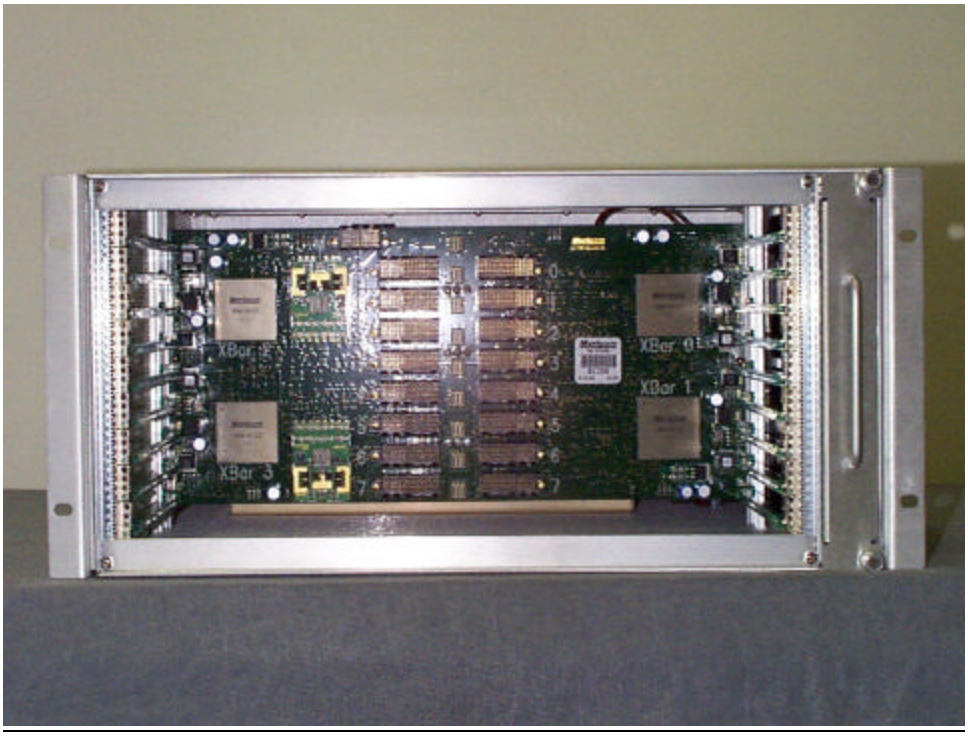
M3-E64



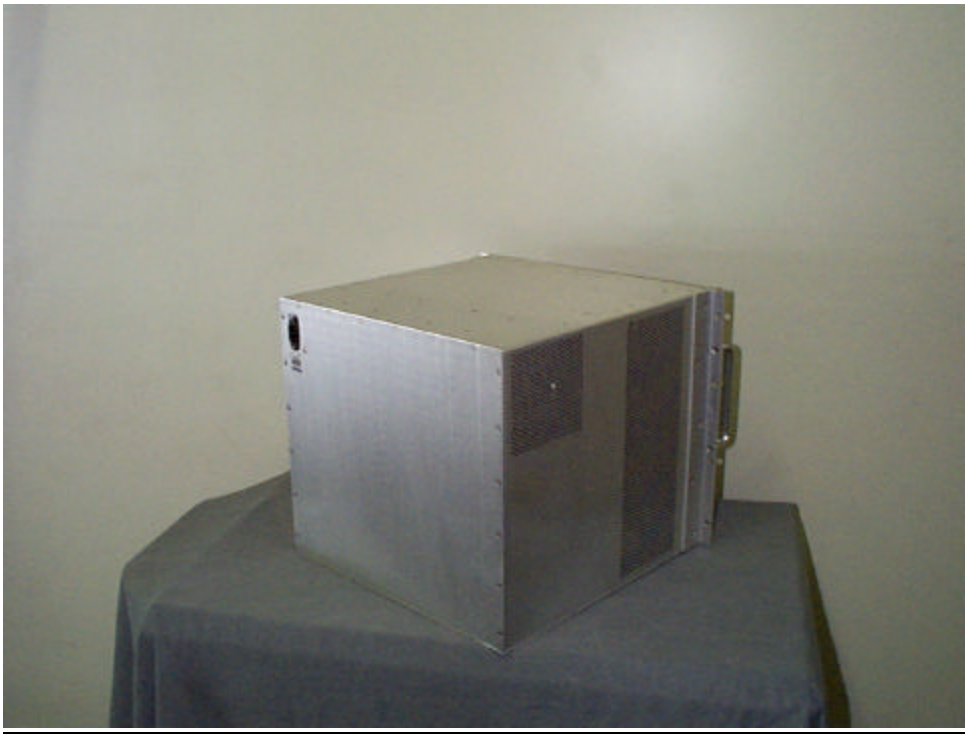


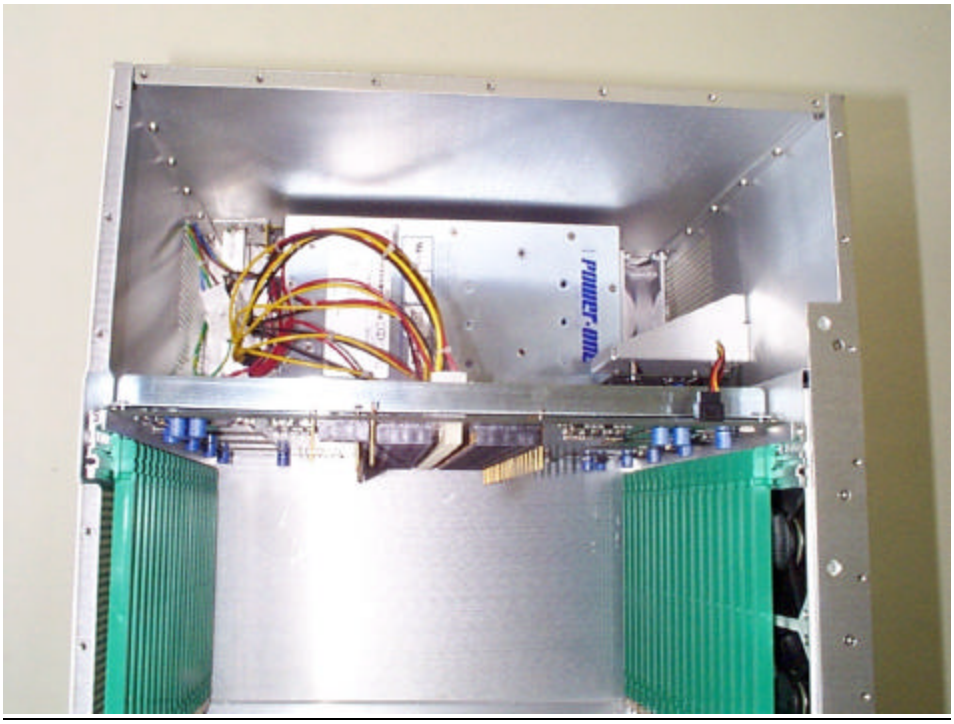


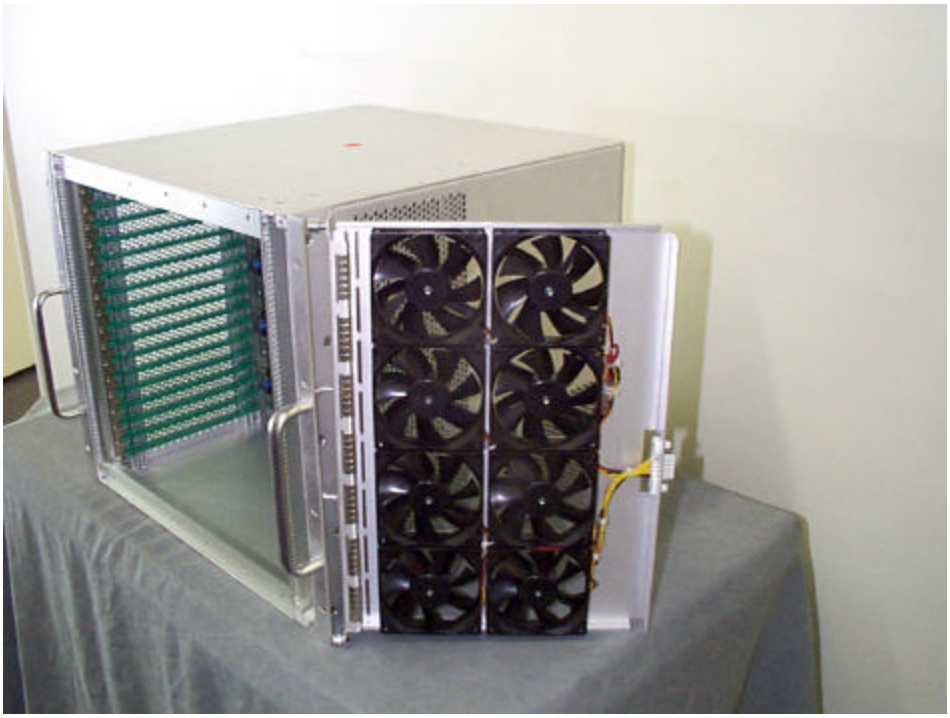


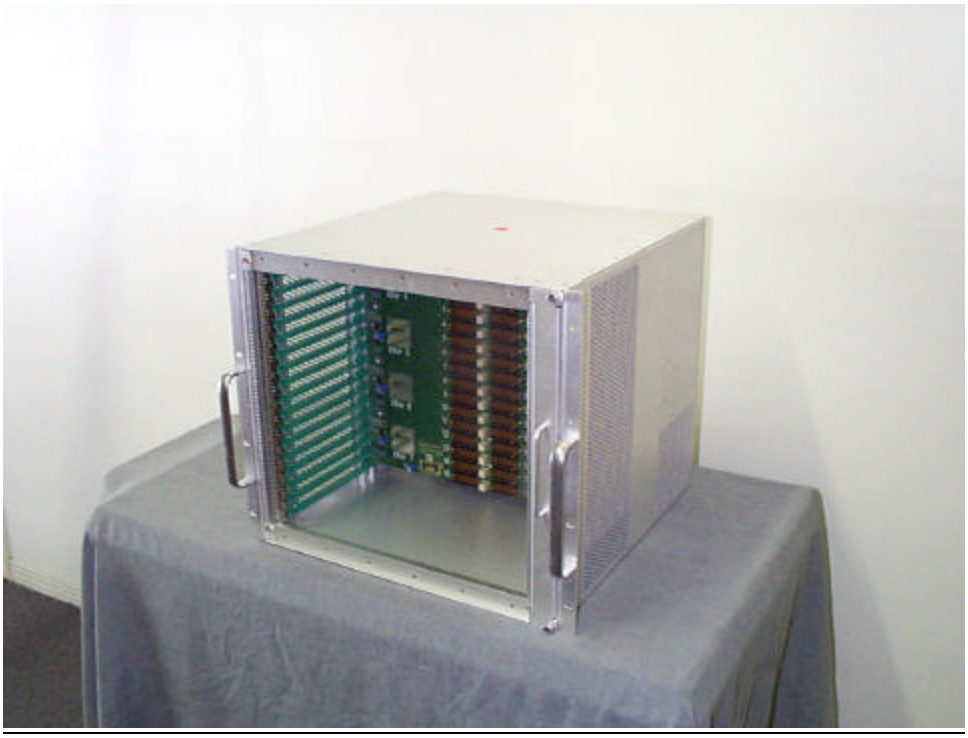


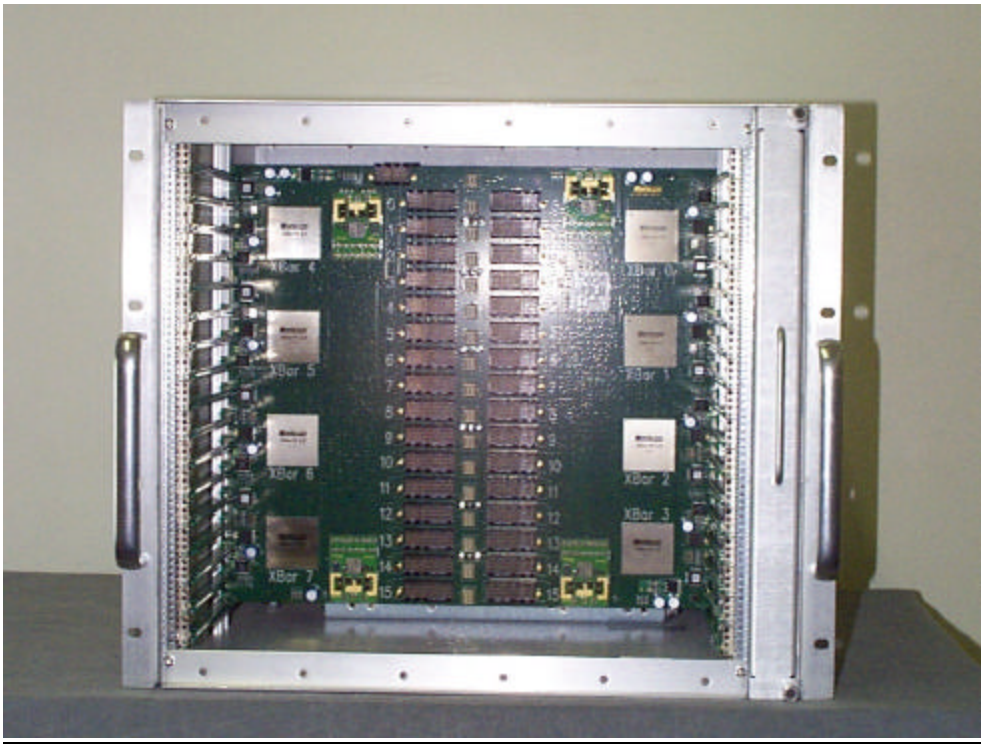
M3-E128

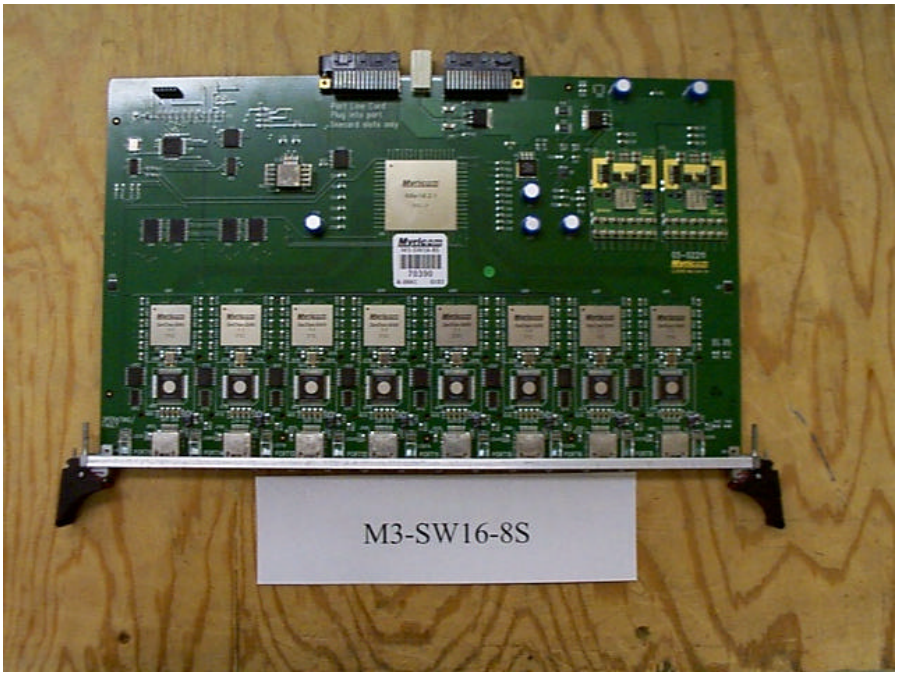


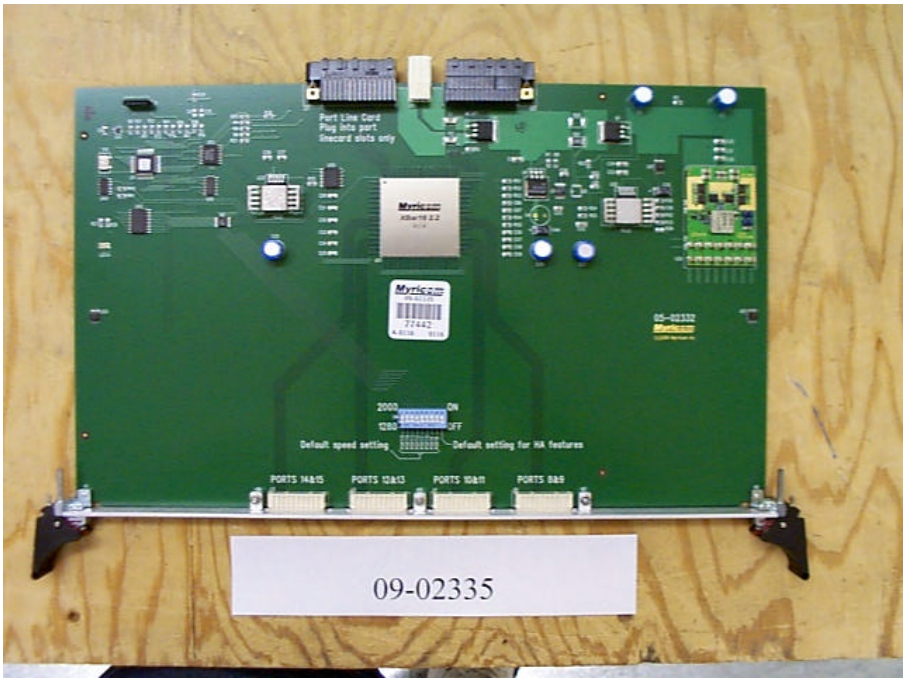


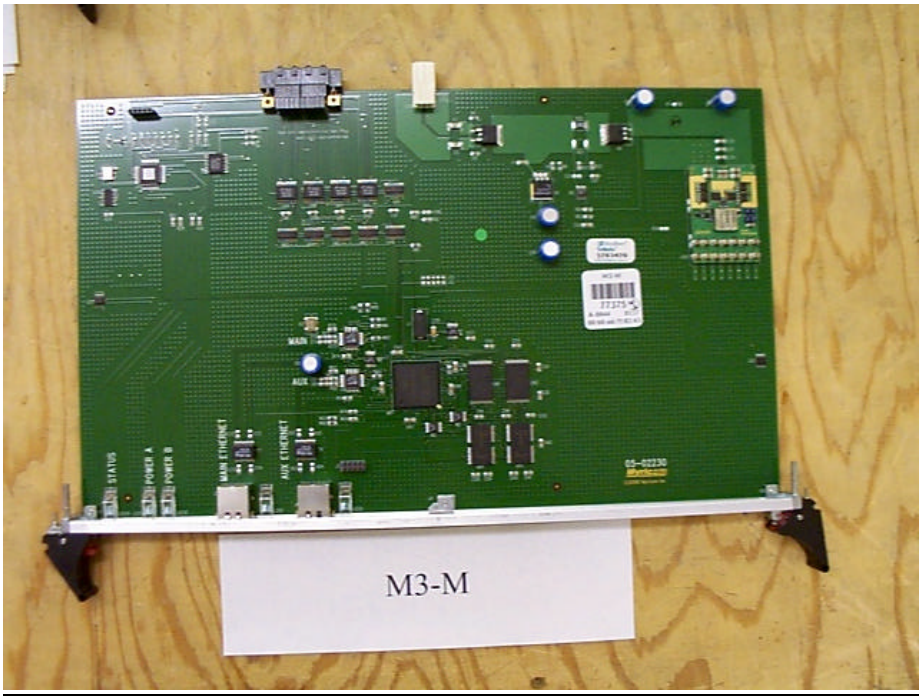


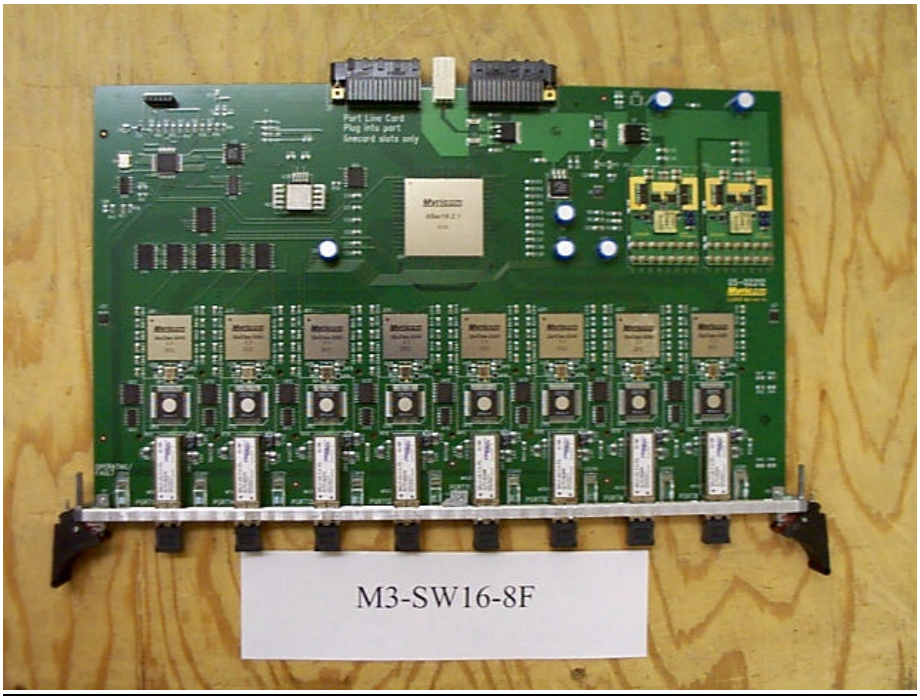


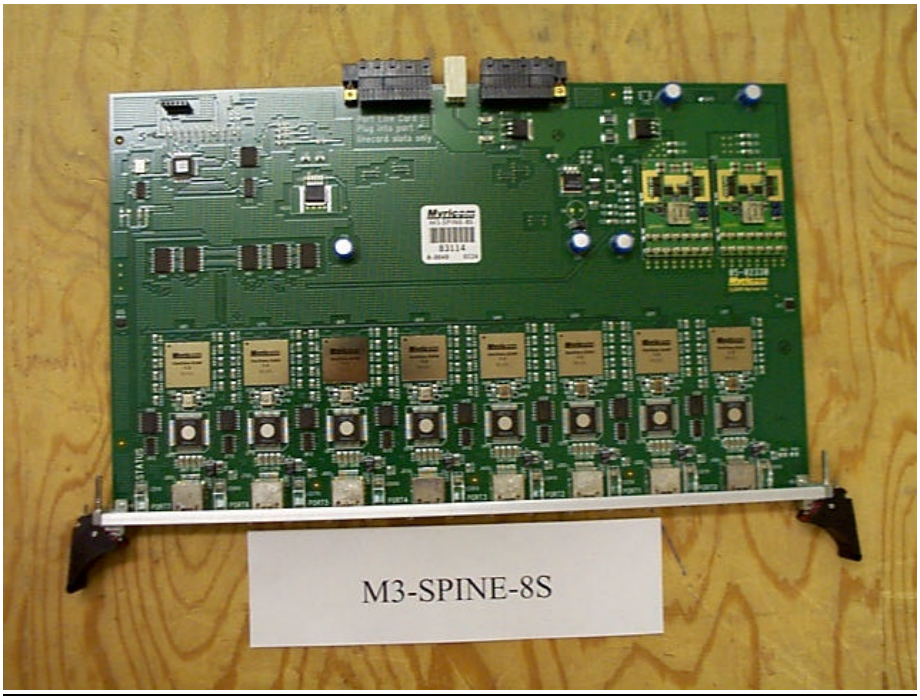

XBar 4
XBar 5
XBar 6
XBar 7
XBar 0
XBar 1
XBar 2
XBar 3

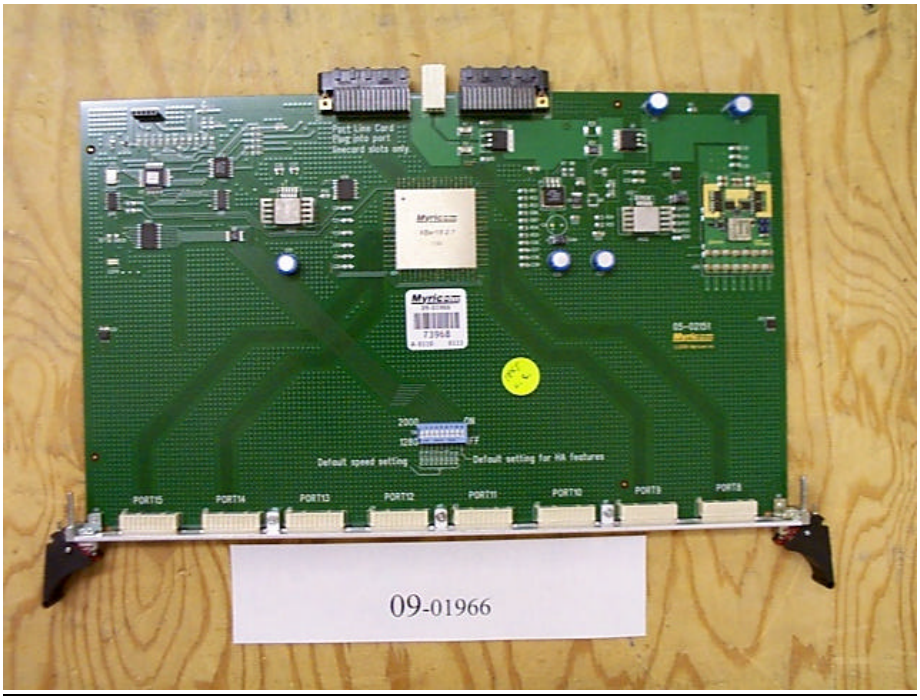

M3-SW16-8S


Port Line Card
Plug into port
1record slots only
2000
ON
1200
OFF
Default speed setting
Default setting for HA features
PORTS 14&15
PORTS 12&13
PORTS 10&11
PORTS 8&9
09-02335


STATUS
POWER A
POWER B
MAIN ETHERNET
AUX ETHERNET
MAIN
AUX
M3-M


Port Line Card
Plug into port
linecard slots only
M3-SW16-8F


M3-SPINE-8S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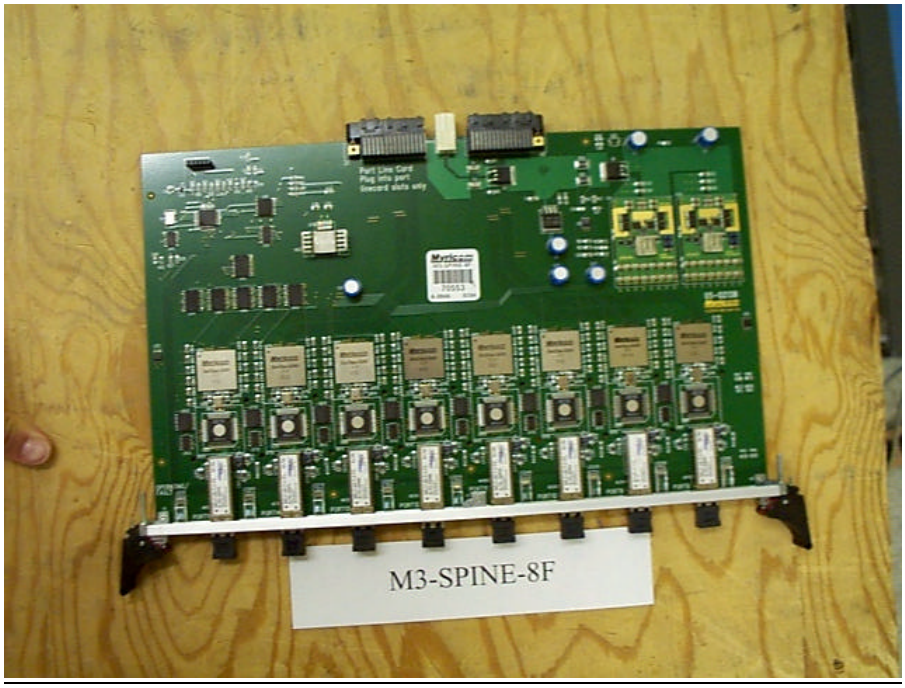
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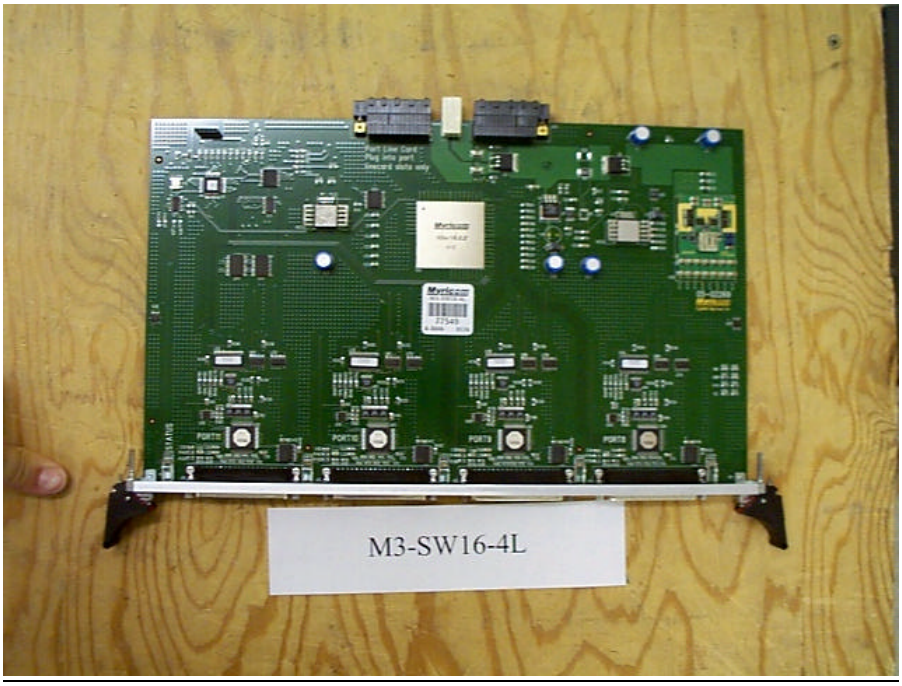

M3-SW16-4L

CB Certificates of Power Supplies

Power Supply for 'M3-16"

INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
COMMISSION ELECTROTECHNIQUE INTERNATIONALE (CEI)

Ref. Certif. No.
CA 2216

IEC SYSTEM FOR CONFORMITY TESTING AND CERTIFICATION OF ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTÈME CEI D'ESSAIS DE CONFORMITÉ ET DE CERTIFICATION DES ÉQUIPEMENTS ÉLECTRIQUES (IECEE) MÉTHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product *Produit*	**Component Type Switching Power Supply**
Name and address of the applicant *Nom et adresse du demandeur*	Power One, Inc., 740 Calle Plano, Camarillo, CA 93012, USA
Name and address of the manufacturer *Nom et adresse du fabricant*	Same as Applicant.
Name and address of the factory *Nom et adresse de l'usine*	As listed on page 2.
Rating and principal characteristics *Valeurs nominales et caractéristiques principales*	As listed on page 2.
Trade mark (if any) *Marque de fabrique (si elle existe)*	Power-One
Model/type Ref. *Ref. de type*	MPU150 Series, models listed on page 2.
Additional information (if necessary) *Information complémentaire (si nécessaire)*	-
A sample of the product was tested and found to be in conformity with *Un échantillon de ce produit a été essayé et a été considéré conforme à la*	IEC **PUBLICATION** 60950 **EDITION** 2 (1991) plus Amds. 1, 2, 3 and 4; plus AT, AU, BE, CA, CH, CN, CZ, DE, DK, ES, FI, FR, GB, GR, HU, IE, IL, IN, IT, JP, KR, NL, NO, PL, SE, SG, SI, SK, US, ZA and GD per CB Bulletin 94AI (March 1999); EN60950: 1992 +A1 +A2 +A3 +A4; CAN/CSA C22.2 No. 950-95; ANSI/UL 1950-1997.
as shown in the Test Report Ref. No. which form part of this certificate *comme indiqué dans le Rapport d'essais numéro de référence qui constitue une partie de ce certificat*	CB 153031-1112443

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

CSA INTERNATIONAL

Date August 11, 2000 **Signature** Tiki Wong

Ref. CB Certificate No. CA 2216
Ref. CB 153031-1112443
August 11, 2000

NAME & ADDRESS OF FACTORIES

Power-One, Inc., 740 Calle Plano, Camarillo, CA 93012

Poder Uno de Mexico, S.A. de C.V
Calzada Constitución y calle, Columbia, San Luis R.C.
Sonora Mexico C.P. 83420.

Mailing Address:
P.O. Box 6990, San Luis, ZA 85349, U.S.A.

Power Electronics, Isabela Industrial Park,
Rd. P.R. 112 KM 2.3, P.O. Box 1572, Isabela, PR 00662
Puerto-Rico

Power-Electronics - Dominion Republic
Edificio A3/A4, Zona Franca Las Americas, Santo Domingo,
Dominican Republic

MODELS, RATINGS AND PRINCIPAL CHARACTERISTICS

Electrical Rating:

MPU150 Series, input rated 85-250V, 50/60Hz, 3A, dc outputs rated as follows:

Suffix	Output	Maximum Output (W)
-3300	3.3V dc/35A max; 5V dc/20A max; 12V dc/2A max	Max rated 150W with 300LFM
-3300S214	3.3V dc/35A max; 5V dc/20A max	Max rated 150W with 300LFM
-3300S217	3.3V dc/35A max; 5V dc/20A max	Max rated 150W with 300LFM
-3300S200	5.1V dc/26A; 12V dc/1A	Max rated 145W with 300LFM
-3300S240	3.3V dc/30A; 12V dc/3A	Max rated 145W with 300LFM
-S248	3.3V dc/25A; 2.5V dc/20A; 12.25V dc/3A	Max rated 157W with 300LFM
-S259	12V dc/15A or 15V dc/12A	Max rated 180W with 300LFM
-S261	48V dc/3.75A	Max rated 180W with 300LFM
-S262	24V dc/7.5A or 28V dc/6.5A	Max rated 180W with 300LFM
-S257, -3524	5V dc/17.5A, 12V dc/4A, 24V dc/2A	Max total output power 171W with 300 LFM

Conditions of Acceptability

The power supply is intended to be installed in compliance with the requirements of the end-use application.

The input and output connections are intended only for connection to circuits inside the end-use equipment. At the request of the manufacturer, the power supply has been evaluated for use with a power source rated 85-250V ac (0% tolerances), 50/60Hz; the suitability for use at any other nominal voltage remains to be determined by a recognizing NCB.

The power supply has been evaluated for use in commercial and industrial applications in a Pollution Degree 2 environment.

The power supply is suitable for use in a operating ambient not exceeding 50°C.

Outputs are SELV, and the following models have available energy exceeding 240VA; -S259, -S262.

The max working voltage present is 760V pk.

This report shall not be reproduced except in full without the written approval of the testing laboratory.

Alternate Power Supply for 'M3-16'; Power Supply for 'M3-32'

INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
COMMISSION ELECTROTECHNIQUE INTERNATIONALE (CEI)

NO 5734

IEC SYSTEM FOR CONFORMITY TESTING TO STANDARDS FOR SAFETY OF ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ESSAIS DE CONFORMITE AUX NORMES DE SECURITE DE L'EQUIPMENT ELECTRIQUE (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICATE D'ESSAI OC

Product *Produit*	Power Supply, Component-Building-in Type
Name and address of the applicant *Nom et adresse du demandeur*	Astec Custom Power(Philippines) Inc, #70 San Rafael St., Bo Kapitolyo, Pasig City, PHILIPPINES
Name and address of the manufacturer *Nom et adresse du fabricant*	Astec Custom Power(Philippines) Inc, #70 San Rafael St., Bo Kapitolyo, Pasig City, PHILIPPINES
Name and address of the factory *Nom et adresse de l'usine*	Refer page 3 in Test Report
Rating and principal characteristics *Valeurs nominales et caractéristiques principales*	7.0A AC 100-240V 50/60Hz or 4.5A DC 120Vmin.-300Vmax., Cl. I DC-output: 29.16A +12V, max. 350W
Trade mark (if any) *Marque de fabrique (si elle existe)*	ASTEC
Model/type Ref. *Ref. de type*	LPS353
Additional information (if necessary) *Information complémentaire (si nécessaire)*	-
A sample of the product was tested and found to be in conformity with *Un échantillon de ce produit a été essayé et a été considéré conforme à la*	IEC 950, 2nd Edition, 1991 + Amd. 1, 1992 + Amd. 2, 1993 + Amd. 3, 1995 + Amd. 4, 1996
as shown in the Test Report Ref. No. which forms part of this certificate *comme indiqué dans le Rapport d'essais numéro de référence qui constitute un partie de ce certificat*	199836190

This CB Test Certificate is issued by the National Certification Body
Ce Certificate d'essai OC est établi par l'Organisme National de Certification

Nemko
P.O. BOX 73, BLINDERN
N-0314 OSLO, NORWAY

Date 1998-09-15

Signature Geir Hørthe
Principal Engineer

Issue 1993-06 / N - version

Power Supply for 'M3-E64'

INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
COMMISSION ELECTROTECHNIQUE INTERNATIONALE (CEI)

Ref. Certif. No.
CA 2608

**IEC SYSTEM FOR CONFORMITY TESTING AND CERTIFICATION OF ELECTRICAL EQUIPMENT (IECEE)
CB SCHEME**

***SYSTÈME CEI D'ESSAIS DE CONFORMITÉ ET DE CERTIFICATION DES ÉQUIPEMENTS ÉLECTRIQUES (IECEE)
MÉTHODE OC***

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product *Produit*	**Component Type Power Supplies For Use In Information Technology Equipment**
Name and address of the applicant *Nom et adresse du demandeur*	Astec International Ltd. 16th & 17th Floors, Lu Plaza, 2 Wing Yip Street Kwun Tong, Kowloon, Hong Kong CHINA
Name and address of the manufacturer *Nom et adresse du fabricant*	Same as applicant
Name and address of the factory *Nom et adresse de l'usine*	See page 2 of CB Test Certificate.
Rating and principal characteristics *Valeurs nominales et caractéristiques principales*	See pages 2 and 3 of CB Test Certificate.
Trade mark (if any) *Marque de fabrique (si elle existe)*	ASTEC
Model/type Ref. *Réf. de type*	MP6-XXX-XXX-XXX-XXX-XXX-XX (X and - refer to model configuration on page 3 of CB Test Certificate)
Additional information (if necessary) *Information complémentaire (si nécessaire)*	PUBLICATION: IEC 60950 EDITION: 2(1991) Including Amendments No. 1(1992), No. 2(1993), No. 3(1995) and No. 4(1996); National Deviations and Group Differences for DK, FI, NO, SE and US per CB Bulletin No. 89A1 (Dec. 96); CAN/CSA C22.2. No. 234-M90; CAN/CSA C22.2 No. 950-95; UL 1950-95.
A sample of the product was tested and found to be in conformity with *Un échantillon de ce produit a été essayé et a été considéré conforme à la*	CB 163661-1020142 (-1185399)
as shown in the Test Report Ref. No. which form part of this certificate *comme indiqué dans le Rapport d'essais numéro de référence qui constitue une partie de ce certificat*	

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

CSA INTERNATIONAL

CSA International
178 Rexdale Boulevard
Toronto, ON Canada M9W 1R3

Date
March 21, 2001

Signature
Tiki Wong

Issue 1998-05

Ref. Certificate No. **CA 2608**
Ref. CB 163661-1020142
(-1185399)
March 21, 2001

Name and Address of the Factories:

F1: Astec Power Inc. Philippine Branch
Main Avenue Corner Road "J"
Cavite Export Processing
Zone Rosario, Cavite, Philippines.

F2: Astec America de Mexico
Calle Martin Careaga No. 100
Las Altos, Tijuana
Baja, California, Mexico

F3: Brandenburg
A Division of Astec Europe Ltd.
29 Navigation Dr
Hurst Business Park
Brierley Hill, West Midlands DY5 1UT
United Kingdom

Rating and Principal Characteristics

Model	Input	Output (dc)	Level
MP6-XXX-XXX-XXX-XXX-XXX-XX (See model configuration on page 3 of 3)	AC 100-240V, 10A, 50/60/400Hz	Refer to model configuration	See Note 1

Maximum continuous output power is 600W at 50°C maximum and 300W at 70°C maximum. With rear air exhaust option, maximum continuous output power is 600W at 40°C. Total loading of dual output modules not to exceed 144W and total loading of triple output modules not to exceed 36W.

Notes:

1. Output classification level may be 1, 3, 5 or 6 depending on model configuration.

   "Level 1" is a CSA designation which denotes that outputs are either not suitable for, or have not been investigated for SELV.

   "Level 3" is a CSA designation which denotes that outputs are SELV and non-hazardous energy level of less than 240VA.

   "Level 5" is a CSA designation which denotes that outputs are SELV and exceed 240VA hazardous energy level.

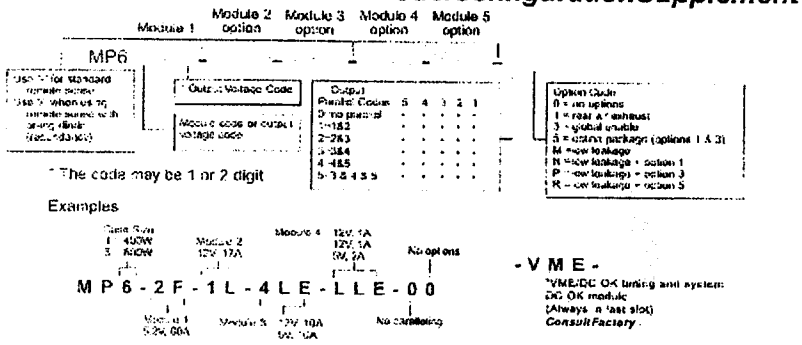
   "Level 6" is a CSA designation which denotes a multiple output power supply with outputs in any combination of Levels 1, 3 and 5. The individual output classification levels shall be marked adjacent to the output ratings.

2. The subject power supplies consist of a front end AC/DC converter and chassis and DC/DC converter modules which are CSA approved and listed under the CB scheme.

Ref. Certificate No. CA 2608
Ref. CB 163661-1020142
(-1185399)
March 21, 2001

MVP Series 400 to 600 Watts
Installation Instructions

Technical Description & Application Notes
Model Configuration Supplement


Module 1
Module 2 option
Module 3 option
Module 4 option
Module 5 option
MP6
Output Voltage Code
Module code or output voltage code
Output Parallel Code
Option Code
0 = no options
1 = rear A/C exhaust
3 = global enable
5 = extend package (options 1 & 3)
M = low leakage
N = low leakage + option 1
P = low leakage + option 3
R = low leakage + option 5
* The code may be 1 or 2 digit
Examples
Module 4
No options
MP6-2F-1L-4LE-LLE-00
-VME-
*VME/DC OK timing and system DC OK module (Always in last slot)
Consult Factory
No conditioning

1. Example: 5V, 60A; *Module Code - 2 E

Single Output 3 digit Code Selection Chart

Voltage Code	Voltage ±10%	Module Code 1 Takes up 1 Slot Current Max. (A)	Module Code 2 Takes up 2 Slot Current Max. (A)	Module Code 3 Takes up 3 Slot Current Max. (A)
A	2V	35	60	120
B	2.2 V	30	50	100
C	3V	35	60	120
D	3.3 V	35	60	120
E	5V	35	60	120
F	5.2 V	35	60	115
G	5.5 V	34	58	108
H	6.0 V	28	42	78
I	8.0 V	20	36	66
J	10 V	15	22	60
K	11 V	17	31	54.6
L	12 V	17	30	50
M	14 V	14	21	40.5
N	15 V	14	20	34
O	18 V	11	19	33.3
P	20 V	10.5	18	30
Q	24 V	8.8	15	25.6
R	28 V	8.7	11	21.4
S	30 V	8.6	11	20
T	32 V	8.2	10.5	18.2
U	36 V	8.4	10	16.6
V	40 V	4.2	7.5	12.5
W	48 V	4.0	7.5	12.5
X	54 V	3.7	6.0	11
Y	60 V	3.5	6.0	10

2. Example: 5V, 10A; 12V, 4A*; Module Code - 4 E L (always)

Dual Output 3-digit Code Selection Chart

Voltage Code	Voltage ±10%	Takes up 1 slot Current Max. (A) V1	V2
A	2V	-	10
B	2.2 V	-	10
C	3V	-	10
D	3.3 V	-	10
E	5V	10	10
F	5.2 V	-	10
G	5.5 V	-	10
H	6.0 V	-	10
I	8.0 V	10	4
J	10 V	10	4
K	11 V	10	4
L	12 V	10	4
M	14 V	9	4
N	15 V	8	4
O	18 V	-	-
P	20 V	-	-
Q	24 V	4	2
R	28 V	3	2

* Note: Total loading not to exceed 144 watts.

3. Example: 12V, 1A; 28V, 0.5A; 5V, 2A*

Triple Output 3-digit Code Selection Chart

Voltage Code	Voltage ±10%	Takes up 1 slot Current Max. (A) V1	V2	V3
A	2V	-	-	2
B	2.2 V	-	-	2
C	3V	-	-	2
D	3.3 V	-	-	2
E	5V	-	-	2
F	5.2 V	-	-	2
G	5.5 V	-	-	2
H	6.0 V	-	-	2
I	8.0 V	1	1	1
J	10 V	1	1	1
K	11 V	1	1	1
L	12 V	1	1	1
M	14 V	1	1	1
N	15 V	1	1	1
O	18 V	1	1	1
P	20 V	-	0.5	0.5
Q	24 V	-	0.5	0.5
R	28 V	-	0.5	0.5

* Note: Total loading not to exceed 36 watts.

Voltage Code	Voltage Range	SINGLE OUTPUT MODULE MAXIMUM (A) 1	2	3	DUAL OUTPUT MODULE MAXIMUM (A) V1	V2	TRIPLE OUTPUT MODULE MAXIMUM (A) V1	V2	V3
*Z	2.4 - 2.7	35	60	120	-	10	-	-	2
	3.6 - 4.0	35	60	120	-	10	-	-	2
	4.6 - 7.0	20	36	60	10	4	-	-	1
	8.5 - 9.0	18	32	60	10	4	-	-	1

ASTEC

* One Z will represent one voltage range only in this five n code.

TÜV

DC / DC Power Supply within Power Supply, M/N: HPF3BCB1YE for 'M3-128'

INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
COMMISSION ELECTROTECHNIQUE INTERNATIONALE (CEI)

Ref. Certif. No.
DE 3 - 5248

IEC SYSTEM FOR CONFORMITY TESTING TO STANDARDS FOR SAFETY OF ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ESSAIS DE CONFORMITE AUX NORMES DE SECURITE DE L'EQUIPEMENT ELECTRIQUE (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product *Produit*	DC to DC Type Switching Power Supply
Name and address of the applicant *Nom et adresse du demandeur*	Power-One, Inc. 740 Calle Plano, Camarillo, CA 93012, USA
Name and address of the manufacturer *Nom et adresse du fabricant*	see applicant
Name and address of the factory *Nom et adresse de l'usine*	see applicant
Rating and principal characteristics *Valeurs nominales et caractéristiques principales*	Rated voltage: 300 Vdc Rated power: max. 1060 W Protection class: I Output: see appendix
Trade mark (if any) *Marque de fabrique (si elle existe)*	Power-One, Inc.
Model/type Ref. *Ref. de type*	DSLP-XX (detailed type designations with the variable X see appendix) (DSLP stands for Double Slot, Low Power)
Additional information (if necessary) *Information complémentaire (si nécessaire)*	
A sample of the product was tested and found to be in conformity with *Un échantillon de ce produit a été essayé et a été considéré conforme à la*	PUBLICATION: IEC 60950:1991 +A1:1992 +A2:1993 +A3:1995 +A4:1996 EDITION: Second
as shown in the Test Report Ref. No. which form part of this certificate *comme indiqué dans le Rapport d'essais numéro de référence qui constitue une partie de ce certificat*	TÜV Product Service 014-10051778

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

Department: ELS MUC/abs
Date: 99-10-28
CB 99 10 24238 135

TÜV PRODUCT SERVICE

TÜV

TÜV
PRODUCT SERVICE

Appendix to CB Certificate Ref. No: DE 3 - 5248

Model Series: DSLP-XX
XX can be any Model Number mentioned in below table.

Model Number	Output Voltage (V)	Output Current (A)	Model Number	Output Voltage (V)	Output Current (A)
A2	5	150	C2	15	52
AB	1.9 – 3.0	150	CS	2	180
AD	5	170	CY	3 – 7.3	80
AJ	8	65	CZ	8.4 – 10.4	80
AQ	10	65	D2	24	32
AX	3 – 7.3	60	DV	28	27
B2	12	65	E2	28	27
BC	12	80	F2	2	150
BD	3-7.3	80	G2	48	16
BS	14 – 24	32	H2	3.3	150
BV	5	90	J2	36	21

Date: 99-10-28

Signature:

DC / DC Power Supply within Power Supply, M/N: HPF3BCB1YE for 'M3-128'

INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
COMMISSION ELECTROTECHNIQUE INTERNATIONALE (CEI)

Ref. Certif. No.
DE 3 - 5249

IEC SYSTEM FOR CONFORMITY TESTING TO STANDARDS FOR SAFETY OF ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ESSAIS DE CONFORMITE AUX NORMES DE SECURITE DE L'EQUIPEMENT ELECTRIQUE (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product *Produit*	DC to DC Type Switching Power Supply
Name and address of the applicant *Nom et adresse du demandeur*	Power-One, Inc. 740 Calle Plano, Camarillo, CA 93012, USA
Name and address of the manufacturer *Nom et adresse du fabricant*	see applicant
Name and address of the factory *Nom et adresse de l'usine*	see applicant
Rating and principal characteristics *Valeurs nominales et caractéristiques principales*	Rated voltage: 300 Vdc Rated power: max. 500 W Protection class: I Output: see appendix
Trade mark (if any) *Marque de fabrique (si elle existe)*	Power-One, Inc.
Model/type Ref. *Ref. de type*	SSLP-XX (detailed type designations with the variable X see appendix) (SSLP stands for Single Slot, Low Power)
Additional information (if necessary) *Information complémentaire (si nécessaire)*	PUBLICATION: IEC 60950:1991 +A1:1992 +A2:1993 +A3:1995 +A4:1996 EDITION: Second
A sample of the product was tested and found to be in conformity with *Un échantillon de ce produit a été essayé et a été considéré conforme à la*	TÜV Product Service 014-10051777
as shown in the Test Report Ref. No. which form part of this certificate *comme indiqué dans le Rapport d'essais numéro de référence qui constitue une partie de ce certificat*	

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

Department: ELS MUC/abs
Date: 99-10-28
CB 99 10 24238 136

TÜV PRODUCT SERVICE

Appendix to CB Certificate Ref. No: DE 3 - 5249

Model Series: SSLP-XX
XX can be any Model Number mentioned in below table.

Model Number	Output Voltage	Output Current
A1	5	35
A6	5	60
AF	15	16
AG	2	60
AU	6	35
AW	10	20
B1	12	20
B4	±12	10
BF	3-7.2	45-60
BJ	2.3	35
BQ	±20	5
C1	15	16
C4	±15	8
CF	8.5	20
D1	24	10

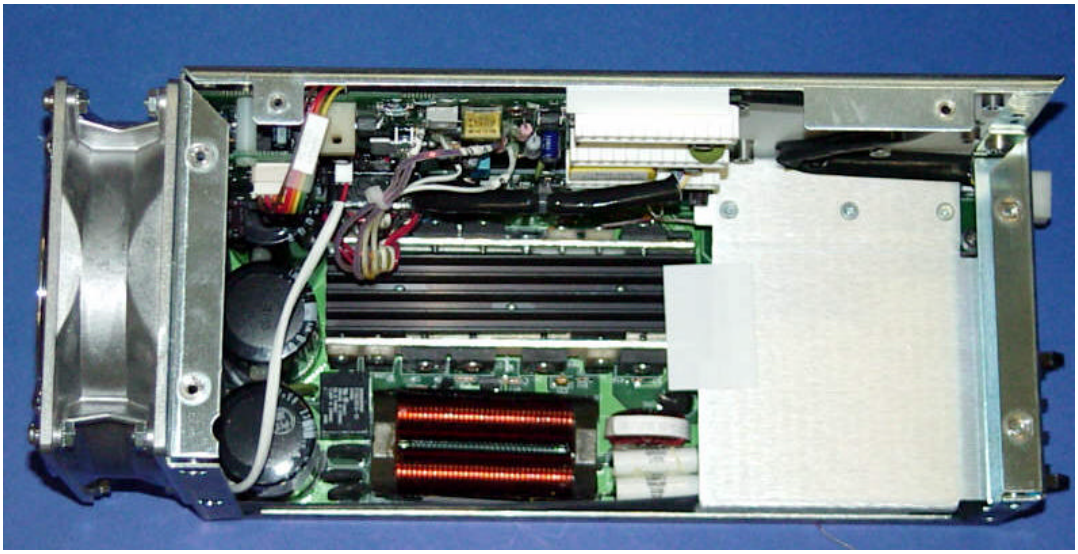
Model Number	Output Voltage	Output Current
D4	±24	5
D6	24	15
DS	3.3	35
E1	28	8.6
E6	28	10
E7	28	16
EG	30	8
F1	2	35
F6	2	60
G1	48	5
H1	3.3	35
H6	3.3	60
M4	12/12	10/4
T1	1.5-1.8	35
T6	1.5-1.8	60
W1	14-24	10

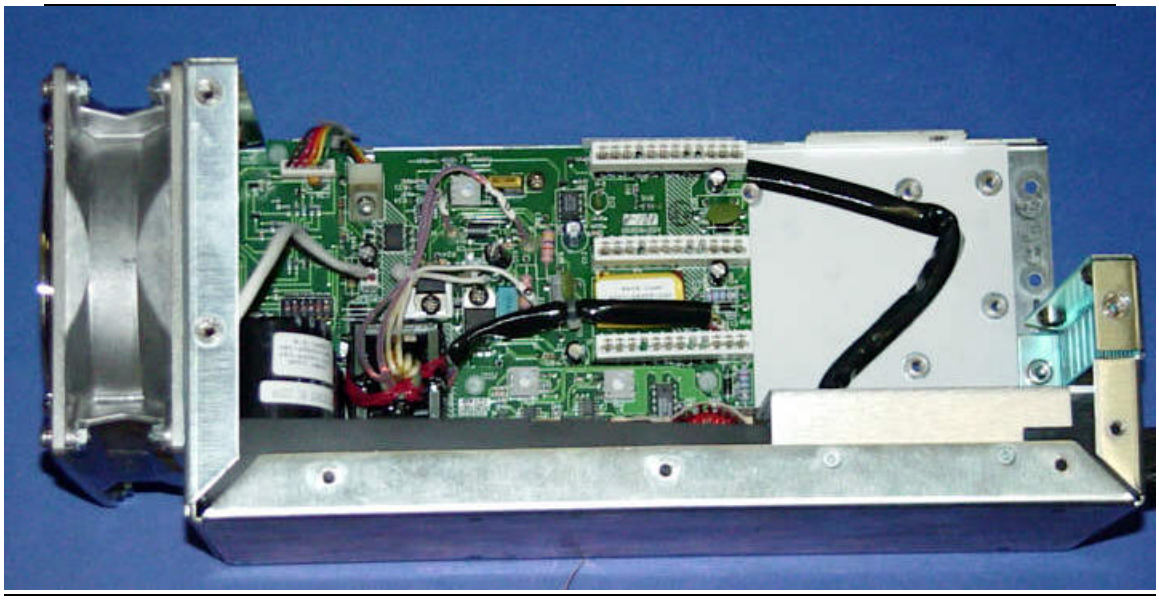
Date: 99-10-28/00-08-25

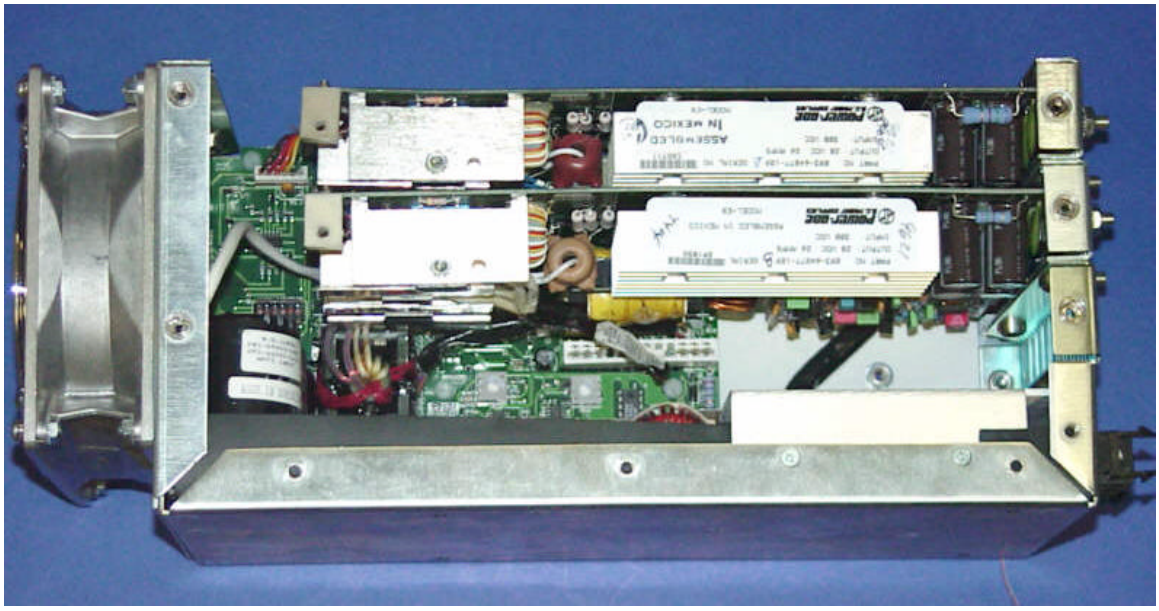
Signature:

Photographs of AC/DC part of Power Supply for M/N: M3-E128

('Power One', M/N: HPF3BCB1YE)







Transformer Specification for (T1) of Power Supply for M/N: M3-E128

('Power One', M/N: HPF3BCB1YE)

WINDING NO.		1	2	3	4	5	6	7	8	9	10
WIRE SIZE & TYPE		27 NLZ	27 NLZ	24 AWG	22 AWG						
COLOR		–	–	RED	RED						
LEAD NO. (START)		A	C	2,4,6	11						
LEAD NO. (FINISH)		B	D	1,3,5	12						
TOTAL TURNS (& WIRES)		33	4(X5)	4	7(X2)						
TURNS PER LAYER		17,16	4	4	7						
NO. OF LAYERS		2	1	1	1						
LAYER INSULATION		ITEM 8–1 LYR	–	–	–						
WINDING WRAPPER		–	ITEM 9	ITEM 9	ITEM 6						
WRAPPER LAYERS		–	3	2	1						
WRAPPER THICKNESS		–	.0075	.0075	.0025						
WRAPPER WIDTH		–	.875	.875	.875						
SHOULDER		ITEM 7 (14 TURNS–BOTH ENDS)		–	–						
OUTPUT		–	–	–	–						
INDUCTANCE	MIN										
	MAX										
RESISTANCE	MIN										
	MAX										

HI–POT PER PSTS–09	
TERMS	VOLTS
A,C–2,4,6,11	3750 VAC
A,C–CORE	1500 VAC
2,4,6,11–CORE	1500 VAC

VOLTAGE RATIO TEST			
TERM	VOLT	TERM	VOLT
A–B	.380	5–6	.040
C–D	.040	11–12	.070
1–2	.040		
3–4	.040		

N. VERIFY AN INDUCTANCE OF .23–.32mH BETWEEN LEADS A & B AT 1KHz.

M. THIS ASSEMBLY REQUIRES:

DIP VARNISH	VACUUM IMPREGNATION	OTHER (SPECIFY)	N/A
√			

L. DIMENSIONS SHOWN FOR REFERENCE ONLY.

K. MARK PER PRODUCT SAFETY MARKING REQUIREMENTS, DOCUMENT NO. PSMR 01A, FOR INSULATION SYSTEM, "CLASS B" AND R278D.

J. WIND TWO TURNS OF LEADS A–D,11,12 THROUGH TOROID CORE, ITEM 2, AS SHOWN IN FIG. 4.

H. WRAP ONE LAYER OF ITEM 6 AROUND TRANSFORMER ASSEMBLY.

G. INSTALL CORES, GAPPED WITH ITEMS 4 & 10. DO NOT MIX TOGETHER CORES FROM DIFFERENT VENDORS. WRAP CORES WITH TWO LAYERS OF ITEM 11. SECURE AROUND EDGES OF GAP WITH ITEMS 25 & 26. ADHESIVE MUST SET BEFORE APPLYING VARNISH.

F. INSTALL A SET OF UNGAPPED CORES, AND CHECK TURNS RATIO.

E. STRIP AND TIN LEADS A–D .25". MARK WITH ITEMS 28–31. TWIST LEADS BEFORE TINNING.

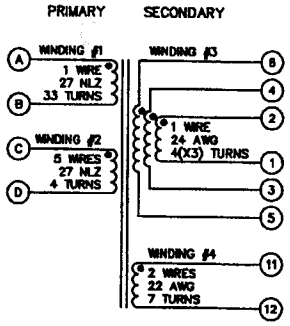
D. SLEEVE LEADS A,B WITH ITEM 19 AND LEADS C,D WITH ITEM 18. INSIDE EDGE OF SLEEVING MUST EXTEND INTO BOBBIN .25 MIN. GLUE SLEEVING IN PLACE USING ITEM 24.

C. TRIM BOBBIN FLANGE AND PINS 8,9,10 AS SHOWN IN FIG. 1.

B. WIND ALL WINDINGS EVENLY ACROSS ENTIRE WIDTH OF WINDING SURFACE.

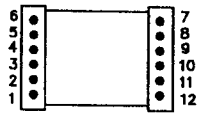
A. TAPE ALL CROSSOVERS COMPLETELY WITH ITEM 7.

NOTES:



SCHEMATIC DIAGRAM

ORIGINAL



BOTTOM VIEW

LTR	ECO	DESCRIPTION	DATE	APPR
E	7916	INC ECO	5-8-98	ETL
D	8581	ADD NEW VIEWS PER ECO.	5–1–98	T.E.
C	8394	MODIDIED SLEEVING P/N.	2–17–98	R.G.
B	7957	MOD. FIG.4, DEL FIG. 5&6	1–28–98	R.G.
A	N/A	RELEASE TO PRODUCTION	3–10–97	CA

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.
TOLERANCES:
.XX = ± .02
.XXX = ± .010
ANGLES: ± 30'
FRACTIONS: ± 1/32

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF POWER-ONE, INC. AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.

APPROVALS		DATE
DRW	S. TAMBURRINO	10/11/96
CHK	B. GEHRKE	3–7–97
ENG	E. McCLAIN	3–5–97
APP	P. BOECK	3–5–97
MFG	C. ALTENBURG	3–5–97

POWER-ONE
POWER SUPPLIES
CAMARILLO, CALIF. 93012 (805) 987–8741

USED ON: HPF3

TITLE: TRANSFORMER

SIZE	CODE IDENT. NO.	DWG NO.	REV
A	54407	66051	E

DO NOT SCALE DRAWING | SCALE NONE | SHEET 1 OF 3

FIG 1

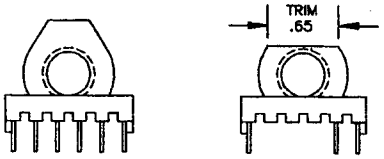


FIG 2

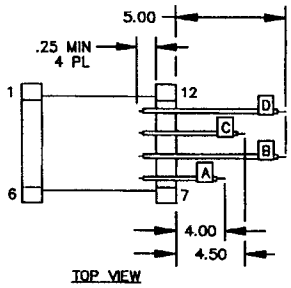
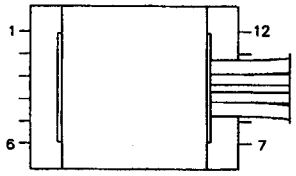
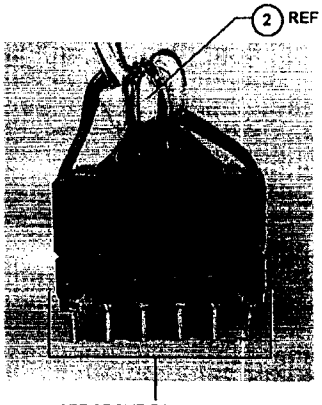


FIG 3



WRAP WIRES AS SHOWN BELOW

WRAP WIRES AS SHOWN ABOVE ON PINS



SEE ABOVE FOR WIRE WRAP AROUND PIN'S. NOTE: CORE CENTERED.

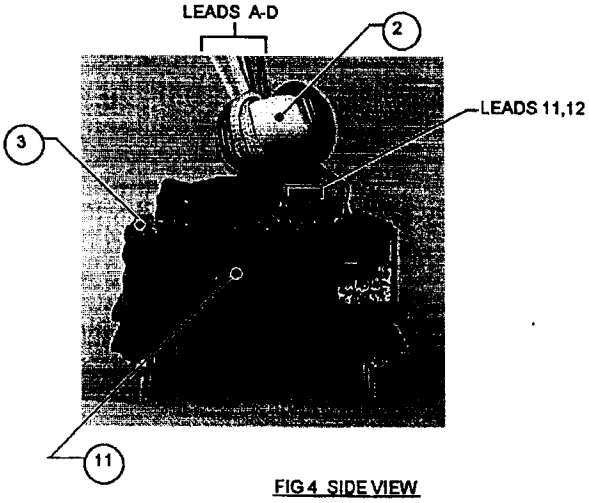
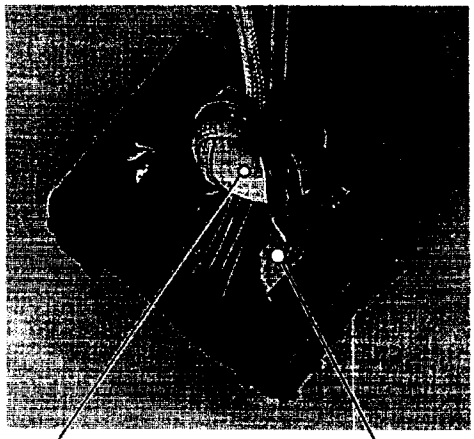


FIG 4 SIDE VIEW



DRAWING NO.	REV
66051	E
SCALE NONE	SHEET 2 OF 3